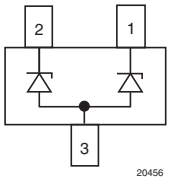
THE DATASHEET OF

GSOT05C-E3-08

Two-Line ESD Protection in SOT-23



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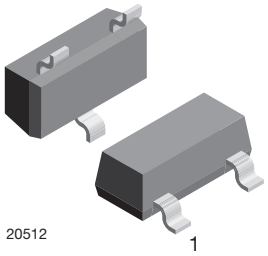
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FEATURES

- Two-line ESD protection device
- ESD immunity acc. IEC 61000-4-2
  ± 30 kV contact discharge
  ± 30 kV air discharge
- ESD capability according to AEC-Q101: human body model: class H3B: > 8 kV
- Space saving SOT-23 package
- e3 - Sn
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

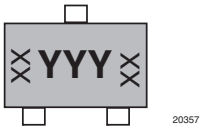
e3

RoHS COMPLIANT

HALOGEN FREE Available

GREEN (5-2008) Available

MARKING (example only)



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YYY = type code (see table below)
XX = date code

DESIGN SUPPORT TOOLS AVAILABLE

3D Models

SPICE Models

ORDERING INFORMATION

PART NUMBER (EXAMPLE)	ENVIRONMENTAL AND QUALITY CODE				PACKAGING CODE		ORDERING CODE (EXAMPLE)
	AEC-Q101 QUALIFIED	RoHS-COMPLIANT + LEAD (Pb)-FREE		TIN PLATED	3K PER 7" REEL (8 mm TAPE), 15K/BOX = MOQ	10K PER 13" REEL (8 mm TAPE), 10K/BOX = MOQ	
		STANDARD	GREEN				
GSOT05C-		E		3	-08		GSOT05C-E3-08
GSOT05C-			G	3	-08		GSOT05C-G3-08
GSOT05C-	H	E		3	-08		GSOT05C-HE3-08
GSOT05C-	H		G	3	-08		GSOT05C-HG3-08
GSOT05C-		E		3		-18	GSOT05C-E3-18
GSOT05C-			G	3		-18	GSOT05C-G3-18
GSOT05C-	H	E		3		-18	GSOT05C-HE3-18
GSOT05C-	H		G	3		-18	GSOT05C-HG3-18

PACKAGE DATA

DEVICE NAME	PACKAGE NAME	TYPE CODE	ENVIRONMENTAL STATUS	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
GSOT03C	SOT-23	03C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C1G	Green	8.1 mg			
GSOT04C	SOT-23	04C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C8G	Green	8.1 mg			
GSOT05C	SOT-23	05C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C2G	Green	8.1 mg			
GSOT08C	SOT-23	08C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C3G	Green	8.1 mg			
GSOT12C	SOT-23	12C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C4G	Green	8.1 mg			
GSOT15C	SOT-23	15C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C5G	Green	8.1 mg			
GSOT24C	SOT-23	24C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C6G	Green	8.1 mg			
GSOT36C	SOT-23	36C	Standard	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260 °C
		C7G	Green	8.1 mg			

ABSOLUTE MAXIMUM RATINGS GSOT03C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	30	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		30	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	369	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		504	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT04C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	30	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		30	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	429	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		564	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT05C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	30	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		30	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	480	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		612	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT08C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	18	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		18	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	345	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		400	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT12C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	12	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		12	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	312	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		337	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT15C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	8	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		8	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	345	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		400	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT24C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	5	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		5	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	235	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		240	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS GSOT36C				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	I_{PPM}	3.5	A
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		3.5	A
Peak pulse power	Pin 1 to 3 or pin 2 to 3 acc. IEC 61000-4-5, t_p = 8/20 µs; single shot	P_{PP}	248	W
	Pin 1 to 2 or pin 2 to 1; pin 3 not connected acc. IEC 61000-4-5, t_p = 8/20 µs; single shot		252	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Operating temperature	Junction temperature	T_J	-55 to +150	°C
Storage temperature		T_{STG}	-55 to +150	°C

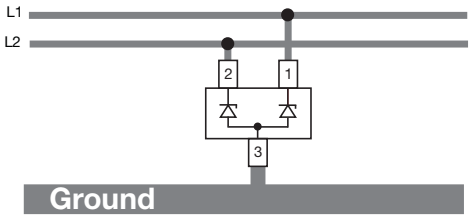
BiAs-MODE (2-line Bidirectional Asymmetrical protection mode)

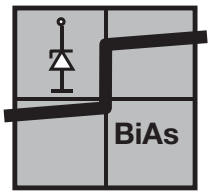
With the GSOTxxC two signal- or data-lines (L1, L2) can be protected against voltage transients. With pin 3 connected to ground and pin 1 and pin 2 connected to a signal- or data-line which has to be protected. As long as the voltage level on the data- or signal-line is between 0 V (ground level) and the specified Maximum Reverse Working Voltage (V_{RWM}) the protection diode between pin 2 and pin 3 and between pin 1 and pin 3 offers a high isolation to the ground line. The protection device behaves like an open switch.

As soon as any positive transient voltage signal exceeds the breakdown voltage level of the protection diode, the diode becomes conductive and shorts the transient current to ground. Now the protection device behaves like a closed switch. The Clamping Voltage (V_C) is defined by the breakdown voltage (V_{BR}) level plus the voltage drop at the series impedance (resistance and inductance) of the protection diode.

Any negative transient signal will be clamped accordingly. The negative transient current is flowing in the forward direction through the protection diode. The low Forward Voltage (V_F) clamps the negative transient close to the ground level.

Due to the different clamping levels in forward and reverse direction the GSOTxxC clamping behavior is Bidirectional and Asymmetrical (BiAs).



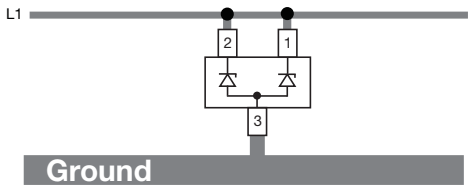


20358

If a higher surge current or peak pulse current (I_{PP}) is needed, both protection diodes in the GSOTxxC can also be used in parallel in order to “double” the performance.

This offers:

- double surge power = double peak pulse current (2 x I_{PPM})
- half of the line inductance = reduced clamping voltage
- half of the line resistance = reduced clamping voltage
- double line capacitance (2 x C_D)
- double reverse leakage current (2 x I_R)



20359

ELECTRICAL CHARACTERISTICS GSOT03C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	3.3	V
Reverse voltage	at I_R = 100 µA	V_R	3.3	-	-	V
Reverse current	at V_R = 3.3 V	I_R	-	-	100	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	4.0	4.6	5.5	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	5.7	7.5	V
	at I_{PP} = I_{PPM} = 30 A		-	10	12.3	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 30 A		-	4.5	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	420	600	pF
	at V_R = 1.6 V; f = 1 MHz		-	260	-	pF

ELECTRICAL CHARACTERISTICS GSOT04C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	4	V
Reverse voltage	at I_R = 20 µA	V_R	4	-	-	V
Reverse current	at V_R = 4 V	I_R	-	-	20	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	5	6.1	7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	7.5	9	V
	at I_{PP} = I_{PPM} = 30 A		-	11.2	14.3	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 30 A		-	4.5	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	310	450	pF
	at V_R = 2 V; f = 1 MHz		-	200	-	pF

ELECTRICAL CHARACTERISTICS GSOT05C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	5	V
Reverse voltage	at I_R = 10 µA	V_R	5	-	-	V
Reverse current	at V_R = 5 V	I_R	-	-	10	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	6	6.8	8	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	7	8.7	V
	at I_{PP} = I_{PPM} = 30 A		-	12	16	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 30 A		-	4.5	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	260	350	pF
	at V_R = 2.5 V; f = 1 MHz		-	150	-	pF

ELECTRICAL CHARACTERISTICS GSOT08C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	8	V
Reverse voltage	at I_R = 5 µA	V_R	8	-	-	V
Reverse current	at V_R = 8 V	I_R	-	-	5	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	9	10	11	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	10.7	13	V
	at I_{PP} = I_{PPM} = 18 A		-	15.2	19.2	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 18 A		-	3	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	160	250	pF
	at V_R = 4 V; f = 1 MHz		-	80	-	pF

ELECTRICAL CHARACTERISTICS GSOT12C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	12	V
Reverse voltage	at I_R = 1 µA	V_R	12	-	-	V
Reverse current	at V_R = 12 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	13.5	15	16.5	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	15.4	18.7	V
	at I_{PP} = I_{PPM} = 12 A		-	21.2	26	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 12 A		-	2.2	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	115	150	pF
	at V_R = 6 V; f = 1 MHz		-	50	-	pF

ELECTRICAL CHARACTERISTICS GSOT15C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	15	V
Reverse voltage	at I_R = 1 µA	V_R	15	-	-	V
Reverse current	at V_R = 15 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	16.5	18	20	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	19.4	23.5	V
	at I_{PP} = I_{PPM} = 8 A		-	24.8	28.8	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 8 A		-	1.8	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	90	120	pF
	at V_R = 7.5 V; f = 1 MHz		-	35	-	pF

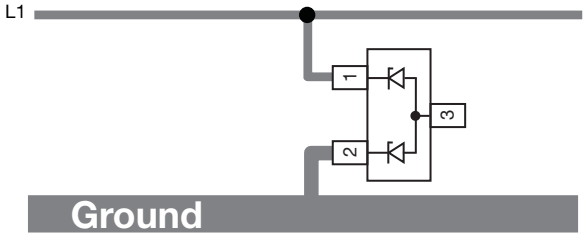
ELECTRICAL CHARACTERISTICS GSOT24C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3

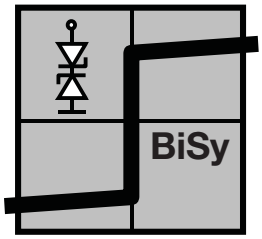
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	24	V
Reverse voltage	at I_R = 1 µA	V_R	24	-	-	V
Reverse current	at V_R = 24 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	27	30	33	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	34	41	V
	at I_{PP} = I_{PPM} = 5 A		-	41	47	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 5 A		-	1.4	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	65	80	pF
	at V_R = 12 V; f = 1 MHz		-	20	-	pF

ELECTRICAL CHARACTERISTICS GSOT36C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 3 or pin 2 to pin 3						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	2	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	36	V
Reverse voltage	at I_R = 1 µA	V_R	36	-	-	V
Reverse current	at V_R = 36 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	39	43	47	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	49	60	V
	at I_{PP} = I_{PPM} = 3.5 A		-	59	71	V
Forward clamping voltage	at I_{PP} = 1 A	V_F	-	1	1.2	V
	at I_{PP} = I_{PPM} = 3.5 A		-	1.3	-	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	52	65	pF
	at V_R = 18 V; f = 1 MHz		-	12	-	pF

BiSy-MODE (1-line bidirectional symmetrical protection mode)

If a bipolar symmetrical protection device is needed the GSOTxxC can also be used as a single line protection device. Therefore pin 1 has to be connected to the signal- or data-line (L1) and pin 2 to ground (or vice versa). Pin 3 must not be connected. Positive and negative voltage transients will be clamped in the same way. The clamping current through the GSOTxxC passes one diode in forward direction and the other one in reverse direction. The clamping voltage (V_C) is defined by the breakthrough voltage (V_{BR}) level of one diode plus the forward voltage of the other diode plus the voltage drop at the series impedances (resistances and inductances) of the protection device.
Due to the same clamping levels in positive and negative direction the GSOTxxC voltage clamping behaviour is bidirectional and symmetrical (BiSy).





20361

ELECTRICAL CHARACTERISTICS GSOT03C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	3.8	V
Reverse voltage	at I_R = 100 µA	V_R	3.8	-	-	V
Reverse current	at V_R = 3.8 V	I_R	-	-	100	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	4.5	5.3	6.2	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	7	8.4	V
	at I_{PP} = I_{PPM} = 30 A		-	14	16.8	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	210	300	pF
	at V_R = 1.6 V; f = 1 MHz		-	190	-	pF

ELECTRICAL CHARACTERISTICS GSOT04C (T_{amb} = 25 °C unless otherwise specified)
between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	4.5	V
Reverse voltage	at I_R = 20 µA	V_R	4.5	-	-	V
Reverse current	at V_R = 4.5 V	I_R	-	-	20	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	5.5	6.8	7.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	7.5	9	V
	at I_{PP} = I_{PPM} = 30 A		-	15.7	18.8	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	155	225	pF
	at V_R = 2 V; f = 1 MHz		-	135	-	pF

ELECTRICAL CHARACTERISTICS GSOT05C (T_{amb} = 25 °C unless otherwise specified)
between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	5.5	V
Reverse voltage	at I_R = 10 µA	V_R	5.5	-	-	V
Reverse current	at V_R = 5.5 V	I_R	-	-	10	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	6.5	7.5	8.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	8.1	9.7	V
	at I_{PP} = I_{PPM} = 30 A		-	17	20.4	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	130	175	pF
	at V_R = 4 V; f = 1 MHz		-	100	-	pF

ELECTRICAL CHARACTERISTICS GSOT08C (T_{amb} = 25 °C unless otherwise specified)
between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	8.5	V
Reverse voltage	at I_R = 5 µA	V_R	8.5	-	-	V
Reverse current	at V_R = 8.5 V	I_R	-	-	5	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	9.5	10.7	11.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	11.7	14	V
	at I_{PP} = I_{PPM} = 18 A		-	18.5	22.2	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	80	125	pF
	at V_R = 4 V; f = 1 MHz		-	60	-	pF

ELECTRICAL CHARACTERISTICS GSOT12C (T_{amb} = 25 °C unless otherwise specified)
between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected

PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	12.5	V
Reverse voltage	at I_R = 1 µA	V_R	12.5	-	-	V
Reverse current	at V_R = 12.5 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	13.5	15.7	16.5	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	16.4	19.7	V
	at I_{PP} = I_{PPM} = 12 A		-	23.4	28.1	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	58	75	pF
	at V_R = 7.5 V; f = 1 MHz		-	36	-	pF

ELECTRICAL CHARACTERISTICS GSOT15C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	15.5	V
Reverse voltage	at I_R = 1 µA	V_R	15.5	-	-	V
Reverse current	at V_R = 15.5 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	17	18.7	20.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	20.4	24.5	V
	at I_{PP} = I_{PPM} = 8 A		-	26.6	30.6	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	45	60	pF
	at V_R = 7.5 V; f = 1 MHz		-	25	-	pF

ELECTRICAL CHARACTERISTICS GSOT24C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	24.5	V
Reverse voltage	at I_R = 1 µA	V_R	24.5	-	-	V
Reverse current	at V_R = 24.5 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	27.5	30.7	33.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	34	41	V
	at I_{PP} = I_{PPM} = 5 A		-	40	48	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	33	40	pF
	at V_R = 12 V; f = 1 MHz		-	18	-	pF

ELECTRICAL CHARACTERISTICS GSOT36C (T_{amb} = 25 °C unless otherwise specified) between pin 1 to pin 2 or pin 2 to pin1; pin 3 not connected						
PARAMETER	**TEST CONDITIONS/REMARKS**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand-off voltage	Max. reverse working voltage	V_{RWM}	-	-	36.5	V
Reverse voltage	at I_R = 1 µA	V_R	36.5	-	-	V
Reverse current	at V_R = 36.5 V	I_R	-	-	1	µA
Reverse breakdown voltage	at I_R = 1 mA	V_{BR}	39.5	43.7	47.7	V
Reverse clamping voltage	at I_{PP} = 1 A	V_C	-	50	60	V
	at I_{PP} = I_{PPM} = 3.5 A		-	60	72	V
Capacitance	at V_R = 0 V; f = 1 MHz	C_D	-	26	33	pF
	at V_R = 18 V; f = 1 MHz		-	10	-	pF

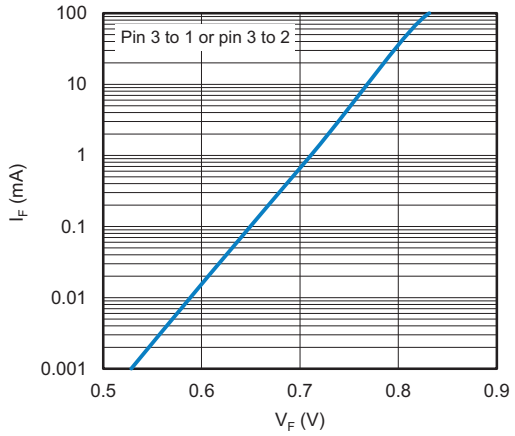


Fig. 1 - Typical Forward Current I_F vs. Forward Voltage V_F

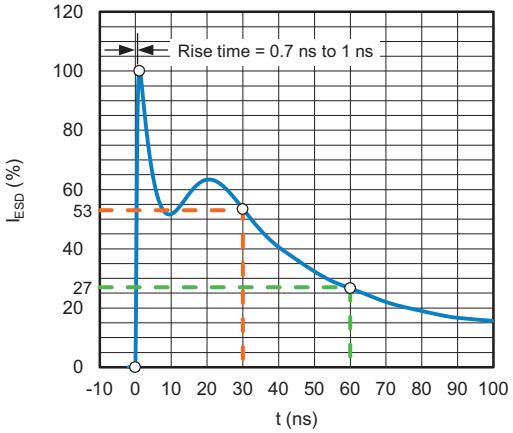


Fig. 4 - ESD Discharge Current Waveform According to IEC 61000-4-2 (330 Ω / 150 pF)

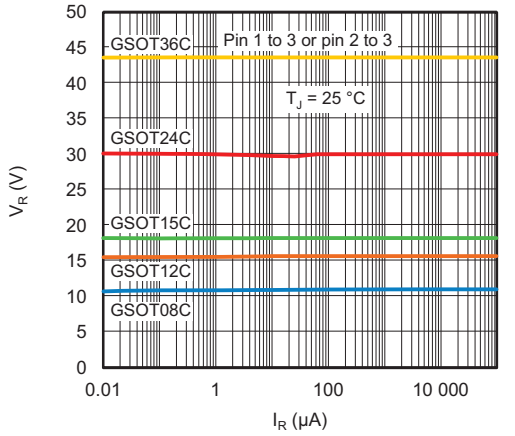


Fig. 2 - Typical Reverse Voltage V_R vs. Reverse Current I_R

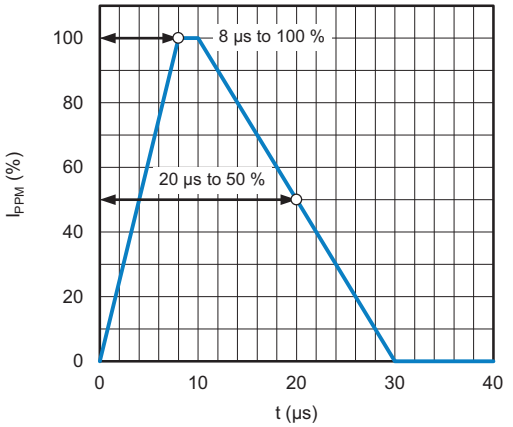


Fig. 5 - 8/20 µs Peak Pulse Current Waveform According to IEC 61000-4-5

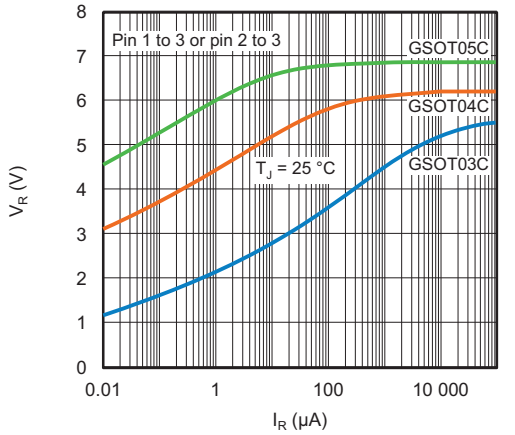


Fig. 3 - Typical Reverse Voltage V_R vs. Reverse Current I_R

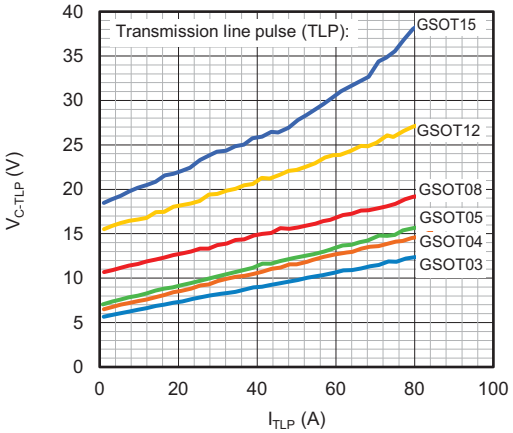


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

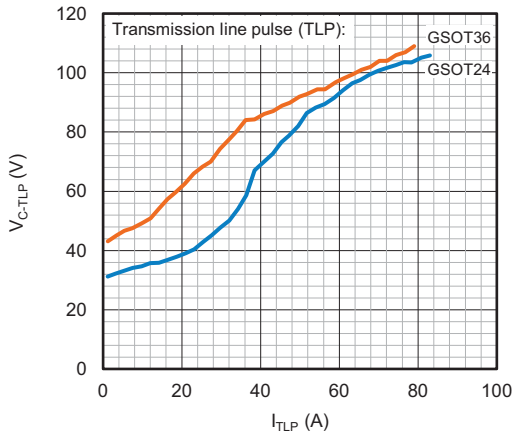


Fig. 7 - Typical Clamping Voltage vs. Peak Pulse Current

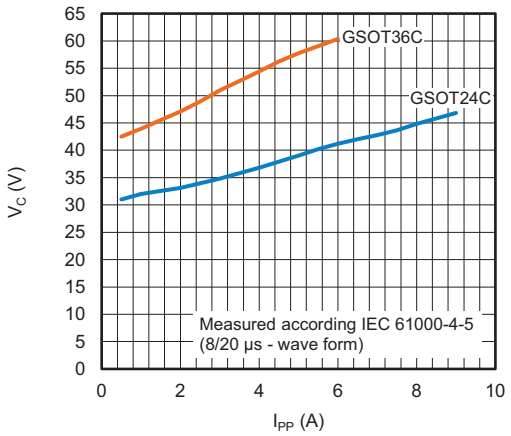


Fig. 9 - Typical Peak Clamping Voltage vs. Peak Pulse Current

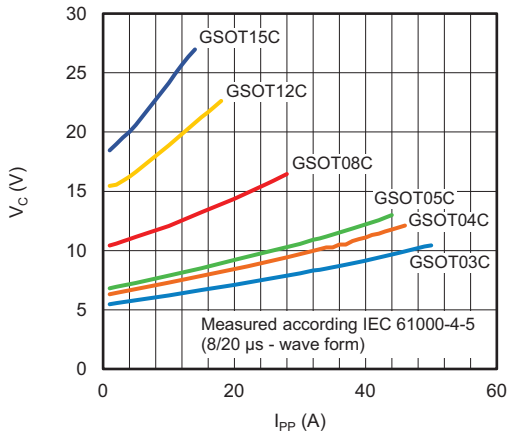


Fig. 8 - Typical Peak Clamping Voltage vs. Peak Pulse Current

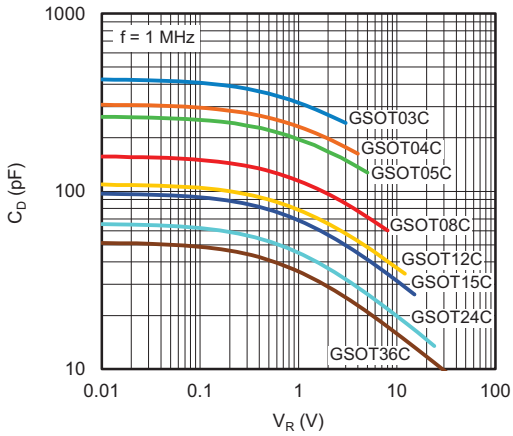
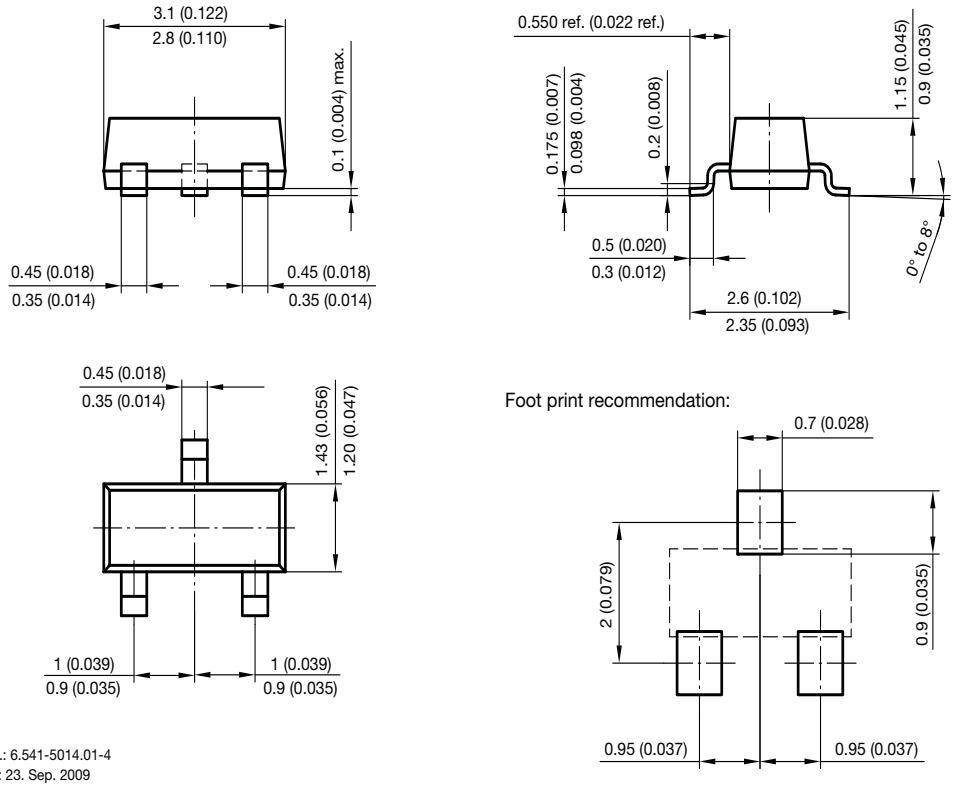


Fig. 10 - Typical Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters (inches): **SOT-23**



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Rev. 8 - Date: 23. Sep. 2009
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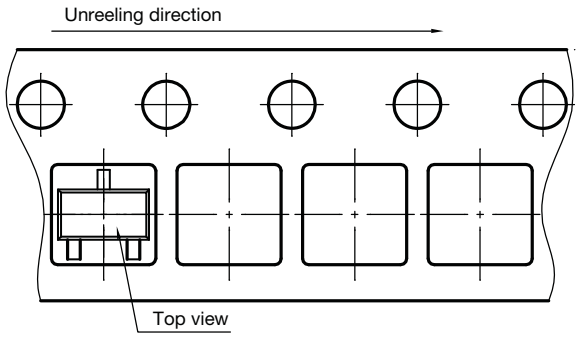

SOT-23

Orientation in carrier tape
SOT-23
S8-V-3929.01-006 (4)
04.02.2010
22607

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