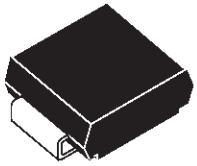
SMP30-xxx Series

TRISIL™

FEATURES

- BIDIRECTIONAL CROWBAR PROTECTION.
- VOLTAGE RANGE: FROM 62 V TO 270 V.
- HOLDING CURRENT :
  I_H = 150 mA min.
- REPETITIVE PEAK PULSE CURRENT :
  I_{PP} = 30 A, 10/1000 µs.
- JEDEC REGISTERED PACKAGE OUTLINE

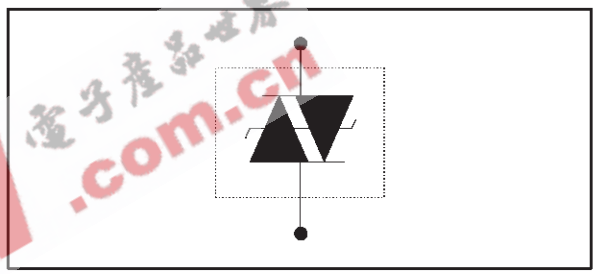


SMA
(JEDEC DO-214AA)

DESCRIPTION

The SMP30-xxx series has been designed to protect telecommunication equipments against lightning surges and overvoltages induced by AC power lines.

SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS:	Peak Surge Voltage (V)	Voltage Waveform (µs)	Current Waveform (µs)	Admissible Ipp (A)	Necessary Resistor (Ω)
(CCITT) ITU-K20	1000	10/700	5/310	25	-
(CCITT) ITU-K17	1500	10/700	5/310	38	-
VDE0433	2000	10/700	5/310	40	10
VDE0878	2000	1.2/50	1/20	50	-
IEC-1000-4-5	level 2 level 3	10/700 1.2/50	5/310 8/20	25 50	- -
FCC Part 68, lightning surge type A	1500 800	10/160 10/560	10/160 10/560	65 50	15.5 8.0
FCC Part 68, lightning surge type B	1000	9/720	5/320	25	-
BELLCORE TR-NWT-001089 First level	2500 1000	2/10 10/1000	2/10 10/1000	125 30	15.0 23.3
BELLCORE TR-NWT-001089 Second level	5000	2/10	2/10	125	15.0
BELLCORE TR-NWT-001089 Intra building lightning	1500	2/10	2/10	100	-
CNET l31-24	1000	0.5/700	0.8/310	25	-

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	T_{amb} = 50 °C	3	W
I_{PP}	Peak pulse current	10/1000 µs 8/20 µs	30 60	A
I_{TSM}	Non repetitive surge peak on-state current	tp = 20 ms	15	A
I^2t	I^2t value for fusing	tp = 20 ms	1	A^2s
dV/dt	Critical rate of rise of off-state voltage	V_{RM}	5	kV/µs
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 55 to + 150 150	°C °C
T_L	Maximum lead temperature for soldering during 10s at 5mm for case		260	°C

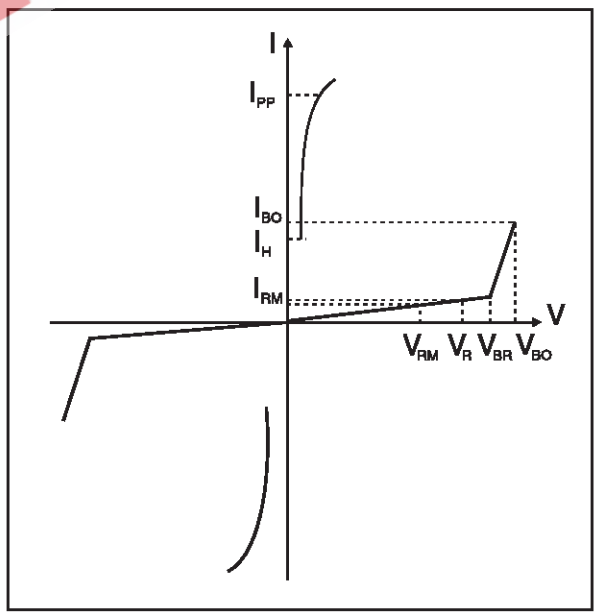
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R_{th} (j-l)	Junction to leads	30	°C/W
R_{th} (j-a)	Junction to ambient on printed circuit with standard footprint dimension	120	°C/W

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
I_{RM}	Leakage current at stand-off voltage
V_R	Continuous Reverse voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
I_{BO}	Breakover current
I_{PP}	Peak pulse current
C	Capacitance



Type	Marking	I_{RM} @ V_{RM} max		I_R @ V_R max note 1		V_{BO} @ I_{BO} max note 2		I_H min note 3	C typ note 4	C typ note 5
		µA	V	µA	V	V	mA	mA	pF	
SMP30-62	QAA	2	56	50	62	82	800	150	50	20
SMP30-68	QAB	2	61	50	68	90	800	150	50	20
SMP30-100	QAC	2	90	50	100	133	800	150	40	16
SMP30-120	QAD	2	108	50	120	160	800	150	40	16
SMP30-130	QAE	2	117	50	130	173	800	150	35	14
SMP30-180	QAF	2	162	50	180	240	800	150	35	14
SMP30-200	QAG	2	180	50	200	267	800	150	30	12
SMP30-220	QAH	2	198	50	220	293	800	150	30	12
SMP30-240	QAI	2	216	50	240	320	800	150	30	12
SMP30-270	QAJ	2	243	50	270	360	800	150	30	12

Note 1: I_R measured at V_R guarantee $V_{BRmin} \geq V_R$

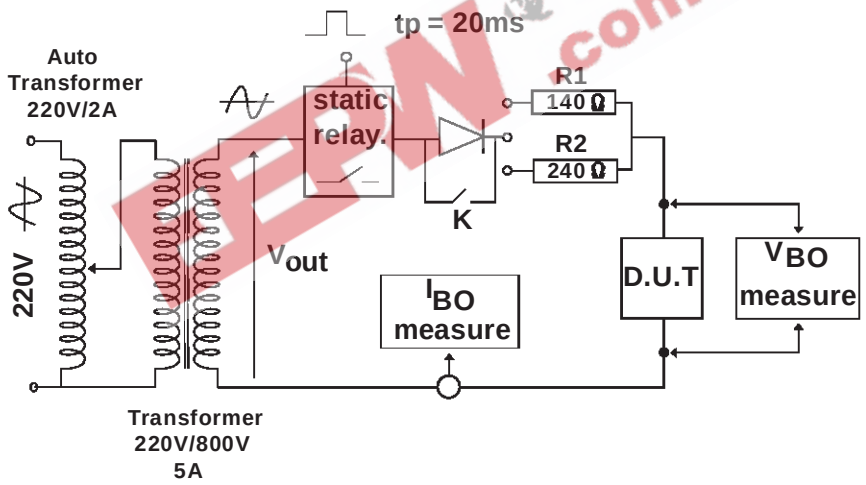
Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.

Note 3: See test circuit 2.

Note 4: V_R = 1V, F = 1MHz.

Note 5: V_R = 50V, F = 1MHz

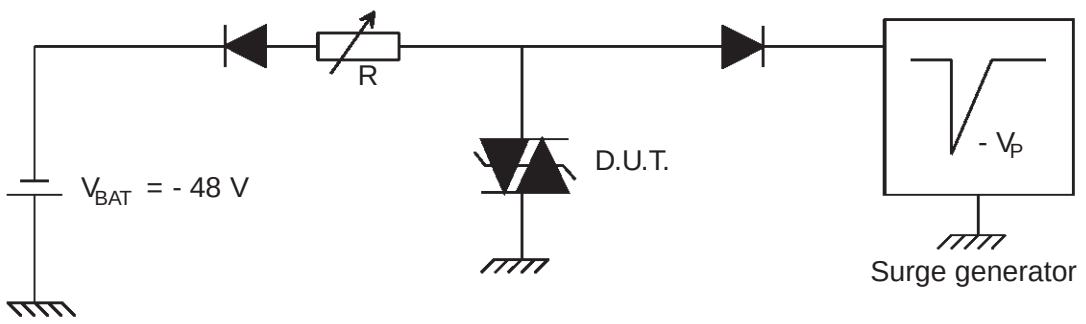
TEST CIRCUIT 1 FOR I_{BO} and V_{BO} parameters :



TEST PROCEDURE :

- Pulse Test duration (tp = 20ms):
  - For Bidirectional devices = Switch K is closed
  - For Unidirectional devices = Switch K is open.
- V_{OUT} Selection
  - Device with V_{BO} < 250 Volt
    - V_{OUT} = 250 V_{RMS}, R_1 = 140 Ω.
  - Device with $V_{BO} \geq$ 250 Volt
    - V_{OUT} = 480 V_{RMS}, R_2 = 240 Ω.

TEST CIRCUIT 2 for I_H parameter.



This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit.

TEST PROCEDURE :

- 1) Adjust the current level at the I_H value by short circuiting the AK of the D.U.T.
  2) Fire the D.U.T with a surge Current : Ipp = 10A , 10/1000 µs.
  3) The D.U.T will come back off-state within 50 ms max.

Fig. 1: Non repetitive surge peak on-sate current versus overload duration (Tj initial=25°C).

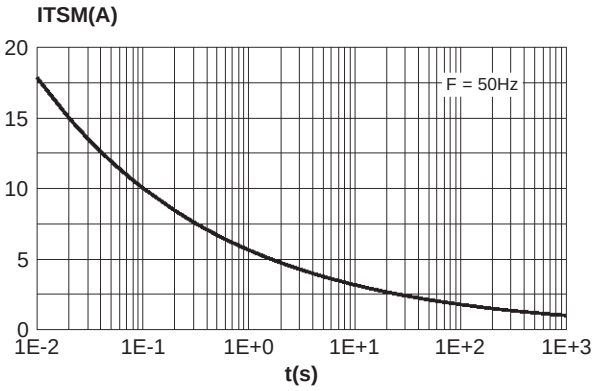


Fig. 2: Relative variation of holding current versus junction temperature.

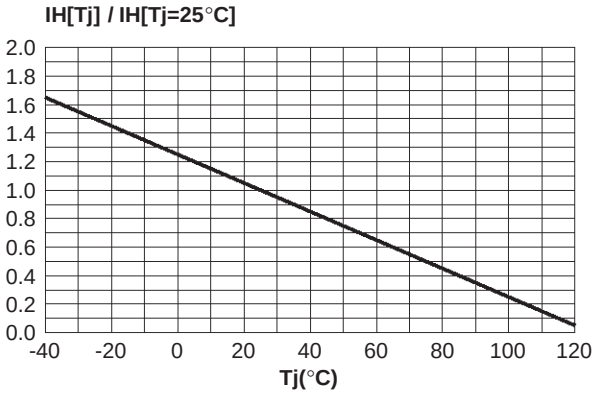


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values)

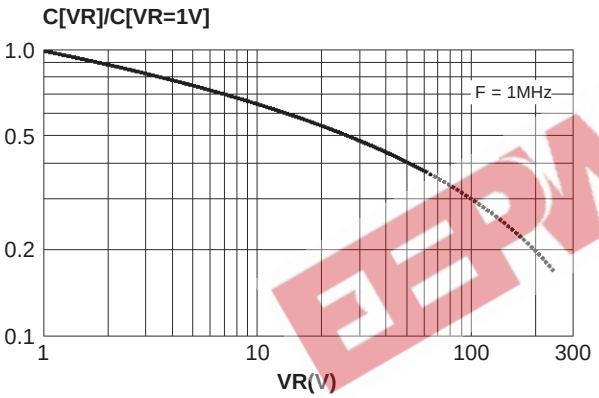


Fig. 4: On-state voltage versus on-state current (typical values).

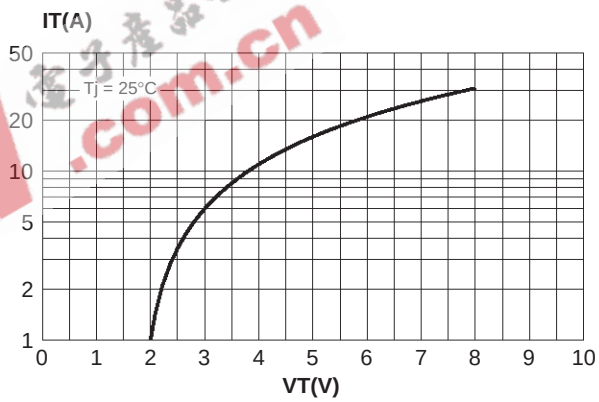


Fig. 5: Variation of thermal impedance junction to ambient versus pulse duration.

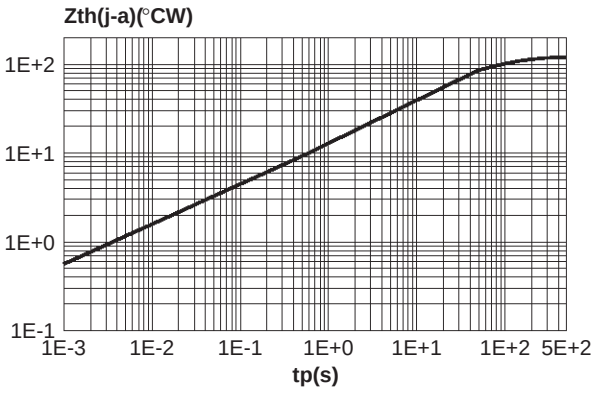
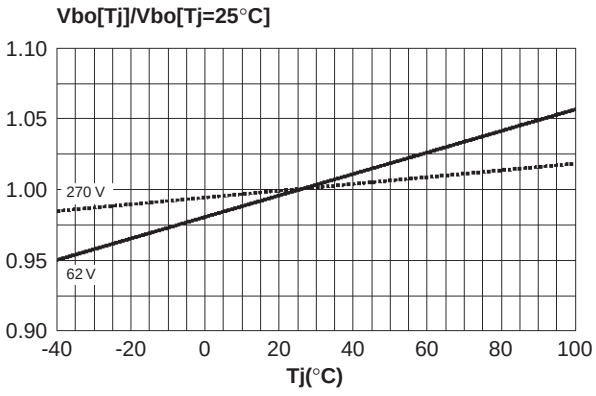
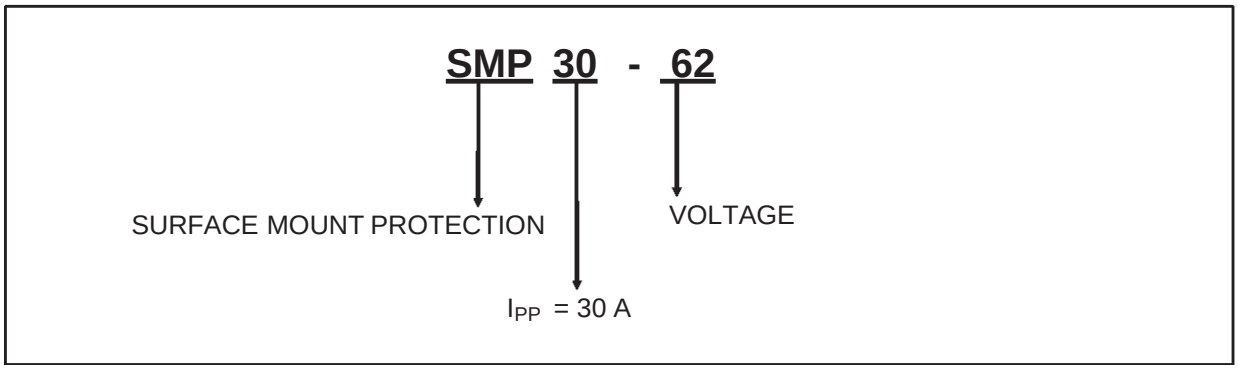


Fig. 6: Relative variation of V_{BO} voltage versus junction temperature.



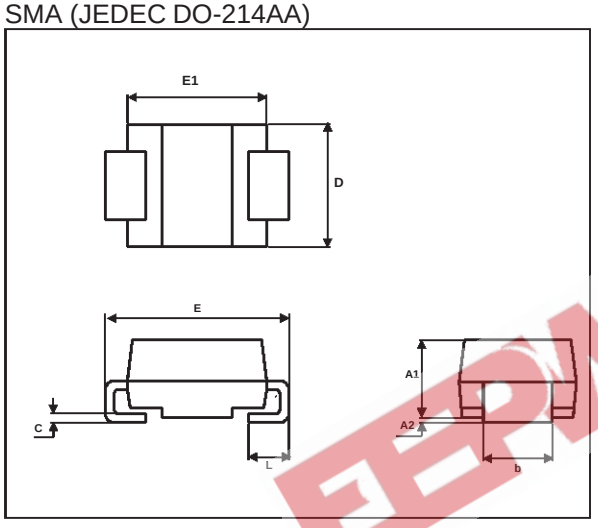
ORDER CODE



MARKING : Logo, Date Code, Part Number.

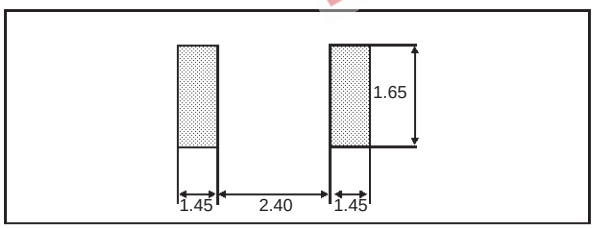
PACKAGE MECHANICAL DATA

SMA (JEDEC DO-214AA)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.41	0.006	0.016
E	4.80	5.60	0.189	0.220
E1	3.95	4.60	0.156	0.181
D	2.25	2.95	0.089	0.116
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



Weight: 0.06 g

Packaging : Tape and reel.