

### Features

- ◆ Bi-directional crowbar transient voltage protection
- ◆ High surge capability
- ◆ High off-state impedance
- ◆ Low leakage current
- ◆ Low on-state voltage
- ◆ Short-circuit failure mode



DO-214AA(SMB)

### Main Application

BORN's thyristor surge protector devices are designed to help protect sensitive telecommunication equipment from the hazards caused by lightning, power contact, and power induction. These devices enable equipment to comply with various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968-A (formerly known as FCC Part 68).

### Typical application including:

- Central office switching equipment. Analog and digital linecards (xDSL, T1/E1, ISDN,.....)
- Customer Premises Equipment (CPE) such as phones, fax machines, modems, POS terminals, PBX systems and caller ID adjunct boxes.
- Primary protection modules including Main Distribution Frames (MDF), building entrance equipment and station protection modules.
- Access network equipment such as remote terminals, line repeaters, multiplexers, cross-connects, WAN equipment, Network Interface Devices (NID).
- Data lines and security systems.
- CATV line amplifiers and power inserters.
- Sprinkler systems.

### Electrical Parameters (T<sub>amb</sub>=25°C)

Part Number	V <sub>DRM</sub>	I <sub>DRM</sub>	V <sub>BO</sub>	I <sub>BO</sub>	V <sub>T</sub>	I <sub>T</sub>	C <sub>o</sub>	I <sub>H</sub>
	Min.	Max.	Max.	Max.	Max.	Max.	Max.	Min.
	V	uA	V	mA	V	A	pF	mA
BEP0080SC	6	5	25	800	4	2.2	100	50
BEP0300SC	25	5	40	800	4	2.2	100	50
BEP0640SC	58	5	77	800	4	2.2	85	150
BEP0720SC	65	5	88	800	4	2.2	85	150
BEP0900SC	75	5	98	800	4	2.2	70	150
BEP1100SC	90	5	130	800	4	2.2	70	150

Part Number	VDRM	IDRM	VBO	IBO	VT	IT	Co	I <sub>H</sub>
	Min.	Max.	Max.	Max.	Max.	Max.	Max.	Min.
	V	uA	V	mA	V	A	pF	mA
BEP1300SC	120	5	160	800	4	2.2	70	150
BEP1500SC	140	5	180	800	4	2.2	55	150
BEP1800SC	170	5	220	800	4	2.2	55	150
BEP2000SC	180	5	220	800	4	2.2	55	150
BEP2300SC	190	5	260	800	4	2.2	50	150
BEP2600SC	220	5	300	800	4	2.2	50	150
BEP3100SC	275	5	350	800	4	2.2	45	150
BEP3500SC	320	5	400	800	4	2.2	35	150
BEP3800SC	360	5	460	800	4	2.2	35	150
BEP4200SC	400	5	540	800	4	2.2	35	150

### Electrical Characteristics

VDRM	Stand-off voltage, is measured at IDRM	I <sub>H</sub>	Holding current.
VBO	Breakover voltage, is measured at 100V/μs.	I <sub>BO</sub>	Breadover current.
CO	Off-state capacitance is measured in V <sub>DC</sub> =2V@1MHz.	I <sub>T</sub>	ON-state current
IDRM	Leakage current, is measured at VDRM.	V <sub>T</sub>	On-state voltage.

### Part Numbering System

BEP    XXXX    S    C  
 (A)            (B)            (C)    (D)

(A) SH's Semiconductor Surge Arrester

(B) Series:0080,0300...3500,3800,4200etc.

(C) Pake:SMB(DO-214AA)

(D) Rating Sure Voltage:C:6KV(10/700μs )

## Electrical Characteristics Curves

Figure1 V-I Characteristics

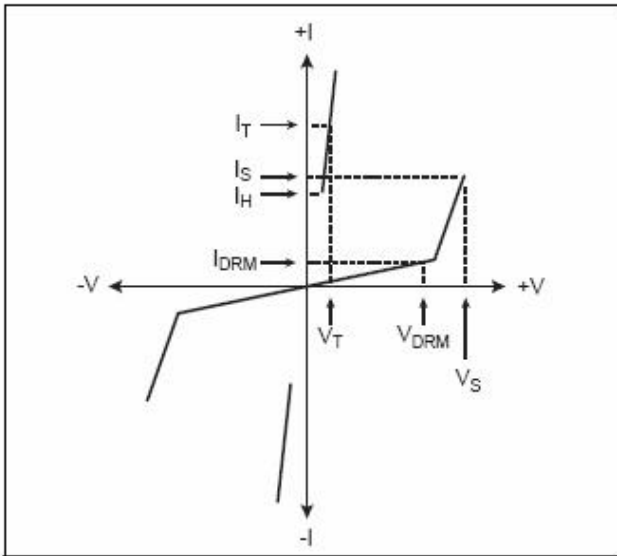


Figure2 tr x td Pulse Wave-form

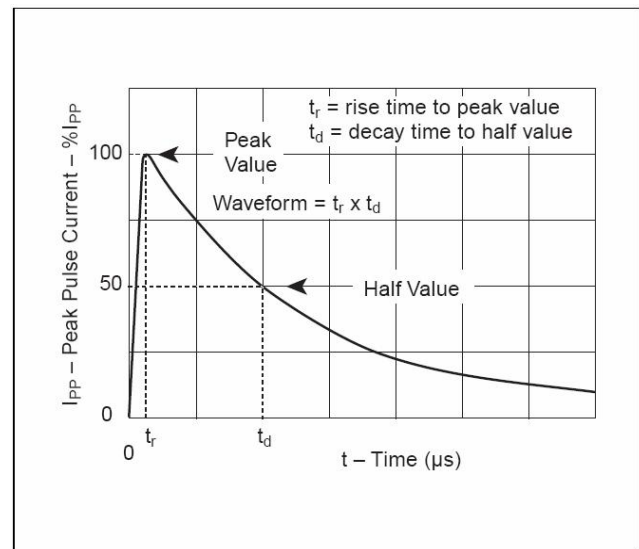


Figure 3 Normalized  $V_S$  Change versus Junction Temperature

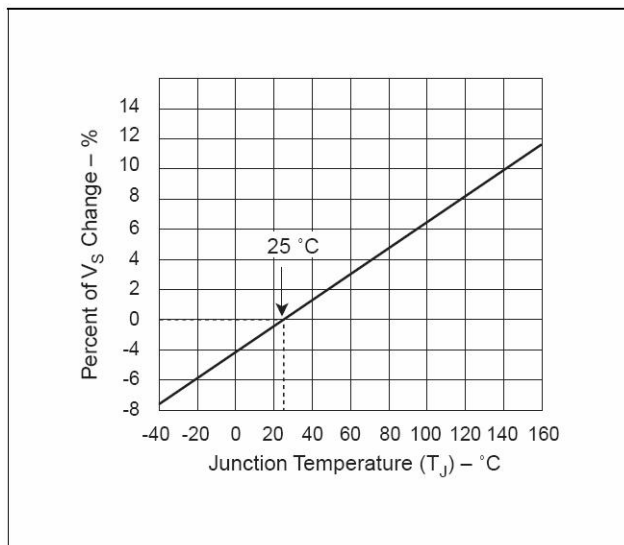
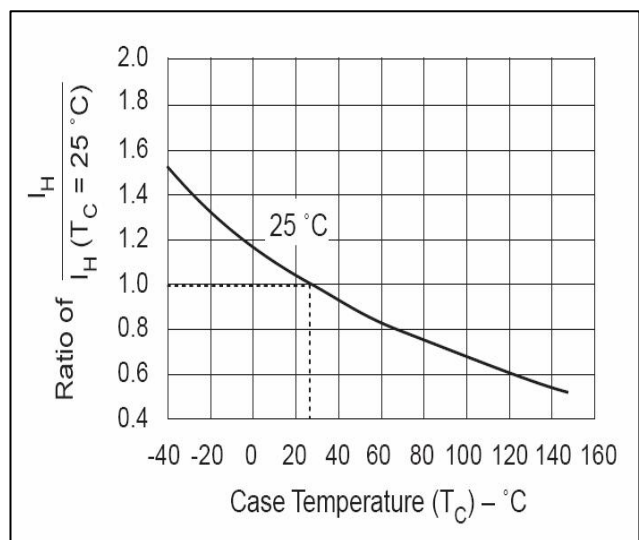



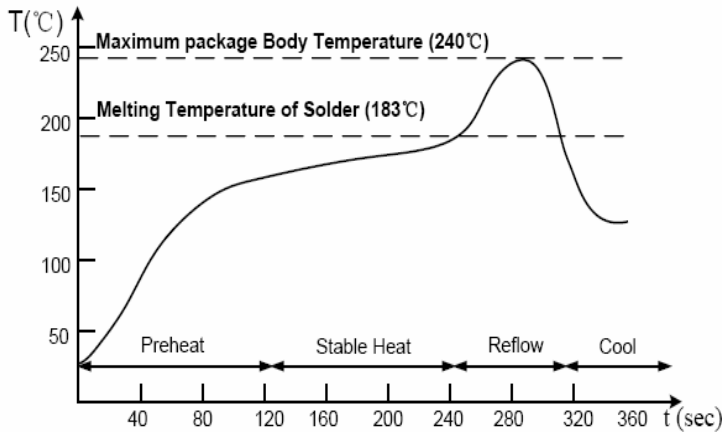
Figure 4 Normalized DC Holding Current



## Thermal Considerations

Package	DO-214AA/SMB	Symbol	Parameter	Value	Unit
	$T_J$	Operating Junction Temperature	-40 to +150	°C	
	$T_S$	Storage Temperature Range	-40 to +150	°C	
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	°C/W	

### Solder Reflow Recommendations



- Recommended reflow methods: IR, vapor phase oven, hot air oven, wave solder.
- The device can be exposed to a maximum temperature of 265°C for 10 seconds.
- Devices can be cleaned using standard industry methods and solvents.

**Notes:** If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

### Product Dimensions

Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.134	0.155	3.40	3.94
B	0.205	0.22	5.21	5.59
C	0.075	0.083	1.90	2.11
D	0.166	0.185	4.22	4.70
E	0.036	0.056	0.91	1.42
F	0.073	0.087	1.85	2.2
G	0.002	0.008	0.05	0.20
H	0.077	0.094	1.95	2.40
J	0.043	0.053	1.09	1.35
K	0.008	0.014	0.20	0.35
L	0.039	0.049	0.99	1.24

