Description (Continued)

After a TIA-968-A Type A surge, the equipment can be faulty, provided that the fault mode causes the equipment to be unusable. There are two wave shapes used: 10/160 for longitudinal surges and 10/560 for metallic surges. For modems with a TISP4310T3BJ connected between the Ring and Tip wires (and without overvoltage protection to ground), the longitudinal 10/160 surge applied to both Ring and Tip will not activate the TISP4310T3BJ, giving an operational pass. The metallic 10/560 surge is applied between Ring and Tip wires and will operate the TISP4310T3BJ. As the TISP4310T3BJ has a current rating of 100 A 10/560, it will survive the TIA-968-A Type A 100 A 10/560 metallic surge, giving an operational pass.

After a TIA-968-A Type B surge, the equipment must be operational. The 9/720 wave shape is used for both longitudinal surges and metallic surges. For modems with a TISP4310T3BJ connected between the Ring and Tip wires (and without overvoltage protection to ground), the longitudinal 9/720 surge applied to both Ring and Tip will not activate the TISP4310T3BJ, giving an operational pass. The metallic 9/720 surge is applied between Ring and Tip wires and will operate the TISP4310T3BJ. As the TISP4310T3BJ has a current rating of 120 A 9/720, it will survive the TIA-968-A Type B 25 A 9/720 metallic surge, giving an operational pass.

The TIA-968-A B-type ringer has voltages of 56.5 V d.c. and up to 150 V rms a.c., giving a peak voltage of 269 V. The TISP4310T3BJ will not clip the B-type ringing voltage, as it has a high impedance up to 269 V.

Absolute Maximum Ratings, T_A = 25 °C (Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage (see Note 1)	V_{DRM}	±269	V
Non-repetitive peak impulse current (see Notes 1 and 2)			
10/160 µs (TIA-968-A, 10/160 µs voltage wave shape)	I_{PPSM}	±150	A
5/310 µs (ITU-T K.44, 10/700 µs voltage wave shape used in K.20/21/45)		±120	
5/320 µs (TIA-968-A, 9/720 µs voltage wave shape)		±120	
10/560 µs (TIA-968-A, 10/560 µs voltage wave shape)		±100	
10/1000 µs (GR-1089-CORE, 10/1000 µs voltage wave shape)		±80	
Non-repetitive peak on-state current (see Notes 1, 2 and 3)			
20 ms, 50 Hz (full sine wave)	I_{TSM}	25	A
16.7 ms, 60 Hz (full sine wave)		30	
1000 s, 50 Hz or 60 Hz a.c.		2.1	
Initial rate of rise of on-state currrent, exponential current ramp. Maximum ramp value < 50 A	di_T/dt	500	A/µs
Junction temperature	T_J	-40 to +150	°C
Storage temperature range	T_{stg}	-65 to +150	°C

NOTES: 1. Initially the device must be in thermal equilibrium with T_J = 25 °C.
2. The surge may be repeated after the device returns to its initial conditions.
3. EIA/JESD51-2 environment and EIA/JESD51-3 PCB with standard footprint dimensions connected with 5 A rated printed wiring track widths. Derate current values at -0.61 %/°C for ambient temperatures above 25 °C.

Recommended Operating Conditions

	Component	Min	Typ	Max	Unit
R_S	Series resistor for TIA-968-A, 10/160 type A surge survival (T-G or R-G connection)	2.5			Ω
	Series resistor for TIA-968-A, 10/560 type A surge survival	0			
	Series resistor for TIA-968-A, 9/720 type B surge survival	0			
	Series resistor for GR-1089-CORE first-level surge survival	5			
	Series resistor for K.20, K.21 and K.45 1.5 kV, 10/700 surge survival	0			
	Series resistor for K.20, K.21 and K.45 co-ordination with a 400 V primary protector	6			

Electrical Characteristics, T_A = 25 °C (Unless Otherwise Noted)

Parameter		Test Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive peak off-state current	$V_D = V_{DRM}$	T_A = 25 °C T_A = 85 °C			±5 ±10	µA
$V_{(BO)}$	Breakover voltage	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω				±310	V
$I_{(BO)}$	Breakover current	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω				±800	mA
V_T	On-state voltage	I_T = ±5 A, t_w = 100 µs				±3	V
I_H	Holding current	I_T = ±5 A, di/dt = ±30 mA/ms		±150			mA
dv/dt	Critical rate of rise of off-state voltage	Linear voltage ramp Maximum ramp value < 0.85V_{DRM}		±5			kV/µs
C_O	Off-state capacitance	f = 1 MHz, V_d = 1 V rms	V_D = 0 V_D = -1 V V_D = -2 V V_D = -50V V_D = -100 V		54 48 43 20 16	65 58 52 24 19	pF

Thermal Characteristics, T_A = 25 °C (Unless Otherwise Noted)

Parameter		Test Conditions	Min	Typ	Max	Unit
$R_{\theta JA}$	Junction to ambient thermal resistance	EIA/JESD51-3 PCB, $I_T = I_{TSM(1000)}$ (see Note 4)			115	°C/W
		265 mm x 210 mm populated line card, 4-layer PCB, $I_T = I_{TSM(1000)}$		52		

NOTE: 4. EIA/JESD51-2 environment and PCB has standard footprint dimensions connected with 5 A rated printed wiring track widths.

Parameter Measurement Information

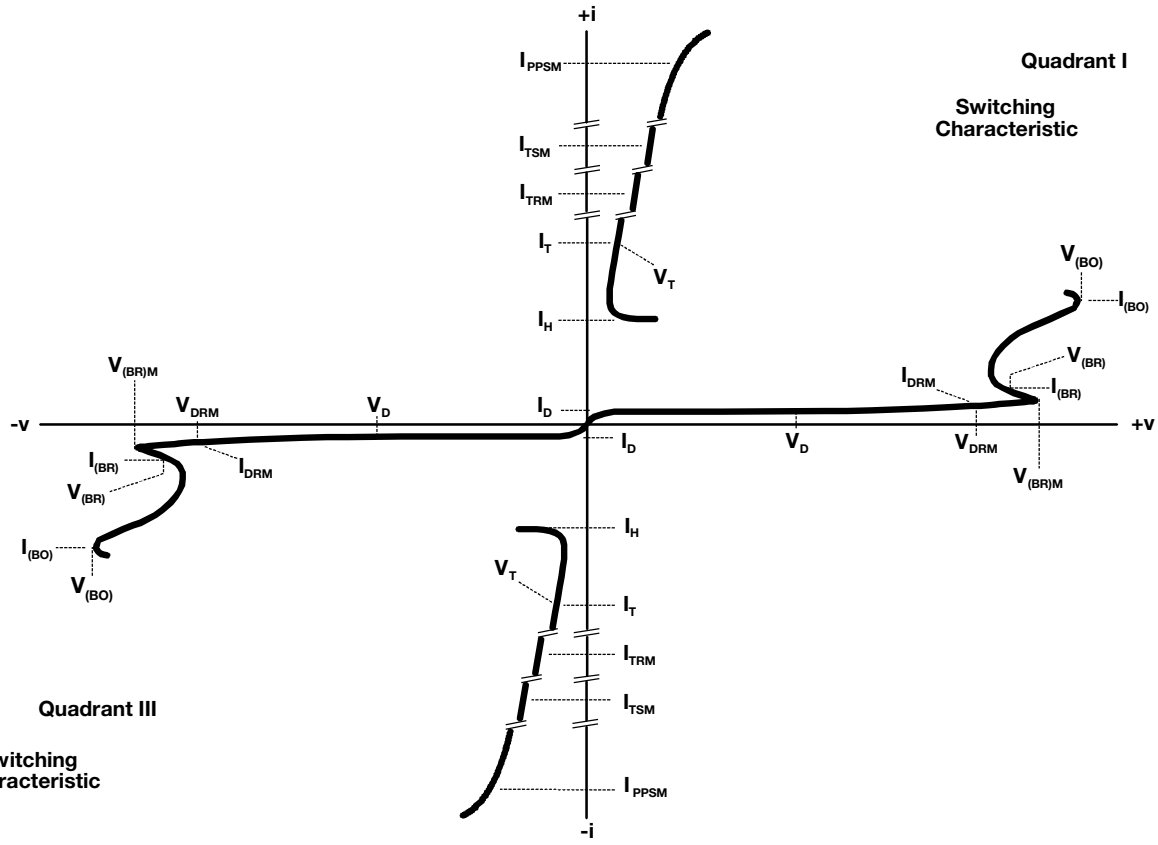

Figure 1. Voltage-Current Characteristic for the Ring and Tip Terminals
All Measurements are Referenced to the Ring Terminal

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