Description (Continued)

After a TIA/EIA-IS-968 Type B surge the equipment must be operational. As the TISP4350T3BJ has a current rating of 120 A, it will survive both Type B surges, metallic (25 A, 9/720) and longitudinal (37.5 A, 9/720), giving an operational pass to FCC Part 68 Type B surges.

The TIA/EIA-IS-968 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 TISP4350T3BJ will not clip the B type ringing voltage as it has a high impedance up to 275 V.

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

Rating		Symbol	Value	Unit
Repetitive peak off-state voltage (see Note 1)	'4290T3 '4350T3 '4400T3	V_{DRM}	±220 ±275 ±335	V
Non-repetitive peak on-state pulse current (see Notes 1 and 2)		I_{PPSM}		A
2/10 (Telcordia GR-1089-CORE, 2/10 voltage wave shape)			±250	
8/20 (IEC 61000-4-5, combination wave generator, 1.2/50 voltage wave shape)			±250	
10/160 (TIA/EIA-IS-968 (replaces FCC Part 68), 10/160 voltage wave shape)			±150	
5/310 (ITU-T K.44, 10/700 voltage wave shape used in K.20/45/21)			±120	
5/320 (TIA/EIA-IS-968 (replaces FCC Part 68), 9/720 voltage wave shape)			±120	
10/560 (TIA/EIA-IS-968 (replaces FCC Part 68), 10/560 voltage wave shape)			±100	
10/1000 (Telcordia GR-1089-CORE, 10/1000 voltage wave shape)			±80	
Non-repetitive peak on-state current (see Notes 1, 2 and 3)		I_{TSM}		A
20 ms (50 Hz), full sine wave			25	
16.7 ms (60 Hz), full sine wave			30	
1000 s 50 Hz/60 Hz			2.1	
Initial rate of rise of on-state current, Linear 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. These non-repetitive rated currents are peak values of either polarity. 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.

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

Rating	Symbol	Value	Unit
Peak overload on-state current, a.c. power line cross tests UL 60950 (see Note 4)	$I_{T(OV)M}$	See Figure 4 for current versus time	A rms

NOTE 4: These electrical stress levels may damage the device silicon chip. After test, the pass criterion is either that the device is functional or, if it is faulty, that it has a short circuit fault mode. In the short circuit fault mode, the following equipment is protected as the device is a permanent short across the line. The equipment would be unprotected if an open circuit fault mode developed.

Recommended Operating Conditions

Component		Min	Typ	Max	Unit
R_S	Series resistor for TIA/EIA-IS-968 (replaces FCC Part 68), 10/160 type A surge survival (T-G or R-G connection)	2.5			Ω
	Series resistor for TIA/EIA-IS-968 (replaces FCC Part 68), 10/560 type A surge survival	0			
	Series resistor for TIA/EIA-IS-968 (replaces FCC Part 68), 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 coordination 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
$V_{(BO)}$	AC breakover voltage	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω	'4290T3 '4350T3 '4400T3			±290 ±350 ±400	V
$I_{(BO)}$	AC breakover current	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω				±800	A
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		±0.15			A
dv/dt	Critical rate of rise of off-state voltage	Linear voltage ramp, Maximum ramp value < 0.85 V_{DRM}		±5			kV/μs
I_D	Off-state current	V_D = ±50 V	T_A = 85 °C			±10	μA
C_{off}	Off-state capacitance	f = 1 MHz, V_d = 1 V rms, V_D = 0, f = 1 MHz, V_d = 1 V rms, V_D = -1 V f = 1 MHz, V_d = 1 V rms, V_D = -2 V f = 1 MHz, V_d = 1 V rms, V_D = -50 V f = 1 MHz, V_d = 1 V rms, V_D = -100 V			54 48 43 20 16	65 58 52 24 19	pF

Thermal Characteristics

Parameter		Test Conditions	Min	Typ	Max	Unit
$R_{\theta JA}$	Junction to free air thermal resistance	EIA/JESD51-3 PCB, T_A = 25 °C, (see Note 5)			115	°C/W
		265 mm x 210 mm populated line card, 4-layer PCB, $I_T = I_{TSM(1000)}$, T_A = 25 °C		52		

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

Parameter Measurement Information

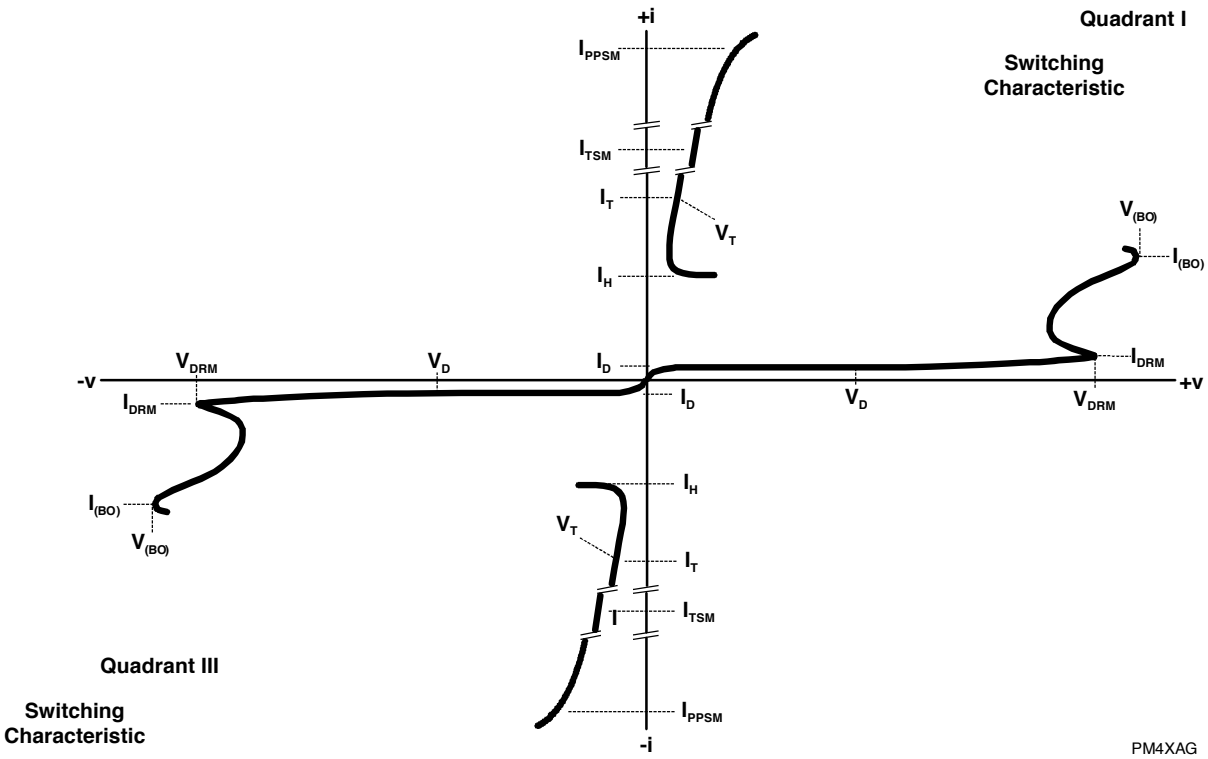

Figure 1. Voltage-Current Characteristic for T and R Terminals
All Measurements are Referenced to the R Terminal

Typical Characteristics

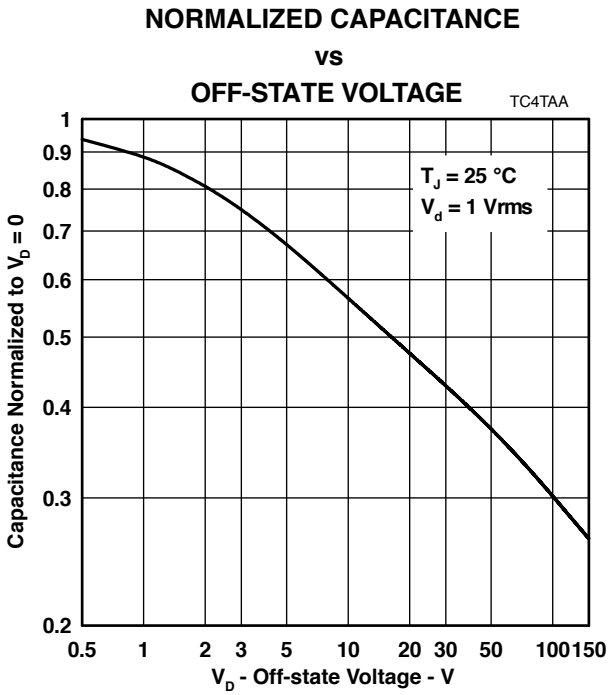

Figure 2.

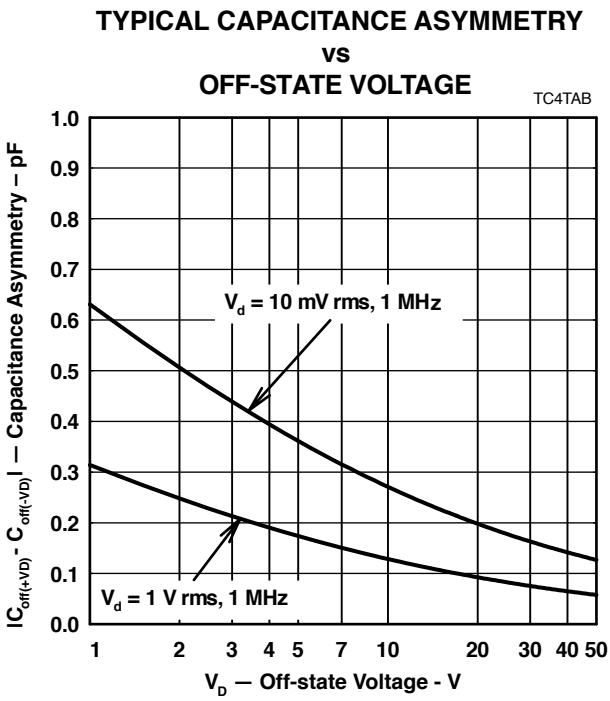

Figure 3.

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Rating and Thermal Information

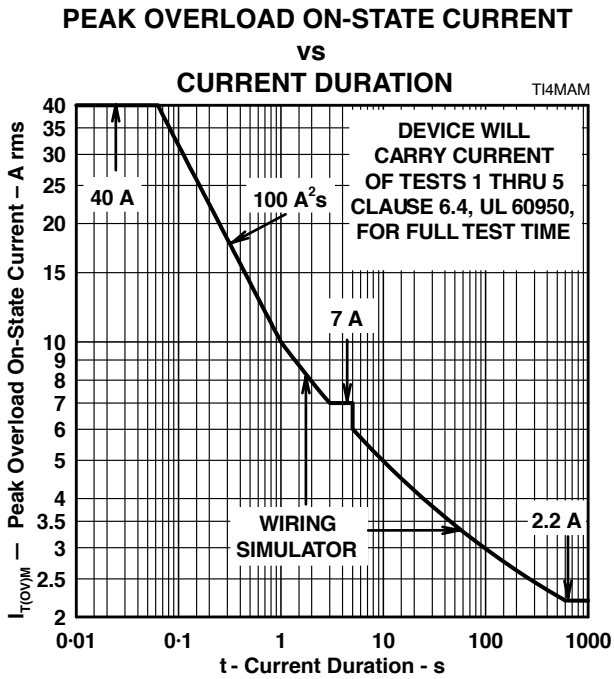

Figure 4. Peak Overload On-state Current against Duration

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