The TISP70xxL1 is guaranteed to withstand the listed international ESD (ElectroStatic Discharge), and lightning impulses in both polarities. Terminals marked NC do not have any internal connections and may be left floating or tied to some circuit point. The TISP7038L1 is a functional replacement for the TPN3021.

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

Rating		Symbol	Value	Unit
Repetitive peak off-state voltage	TISP7015L1 TISP7038L1	V_{DRM}	± 8 ± 28	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)			200	
1/20 (ITU-T K.22, 1.2/50 voltage wave shape, also VDE0878)			100	
8/20 (IEC 61000-4-5, Figure 12 generator, 1.2/50 voltage wave shape)			100	
10/160 (TIA/EIA-IS-968 (formally FCC Part 68), 10/160 voltage wave shape)			75	
5/310 (ITU-T k.20/21, 10/700 voltage wave shape, also IEC 61000-4-5 and VDE0433)			50	
10/560 (TIA/EIA-IS-968 (formally FCC Part 68), 10/560 voltage wave shape)			40	
10/1000 (Telcordia GR-1089-CORE, 10/1000 voltage wave shape)			30	
Non-repetitive peak on-state current (see Note 1)		I_{TSM}		A
16.7 ms (60 Hz) full sine wave			9	
20 ms (50 Hz) full sine wave			8	
0.2 s 50 Hz/60 Hz a.c.			3	
2.0 s 50 Hz/60 Hz a.c.			1.5	
Junction temperature		T_J	-40 to +150	°C
Storage temperature range		T_{stg}	-65 to +150	°C

NOTES: 1. Initially the TISP70xxL1 must be in thermal equilibrium at the specified TA. The surge may be repeated after the TISP70xxL1 returns to its initial conditions.
2. These non-repetitive rated currents are peak values of either polarity.

EMC Immunity Test Ratings, T_A = 25 °C (Unless Otherwise Noted)

Rating		Symbol	Value	Unit
Level 3 open-circuit voltage, IEC 61000-4-2, 2001-4, ESD generator, also ITU-T K.20		$V_{O/C}$		kV
	contact discharge		6	
	air discharge		8	

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

Parameter		Test Conditions		Min	Typ	Max	Unit
I_{DRM}	Repetitive peak off-state current	$V_D = \pm V_{DRM}$				±4	μA
$V_{(BO)}$	Breakover voltage	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω	TISP7015L1 TISP7038L1			±15 ±38	V
$I_{(BO)}$	Breakover current	dv/dt = ±250 V/ms, R_{SOURCE} = 300 Ω				±300	mA
I_H	Holding current	IT = ±5 A, di/dt = ±30 mA/ms		±30			mA

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

Parameter		Test Conditions		Min	Typ	Max	Unit
C_{KA}	Off-state capacitance	f = 1 MHz, V_d = 1 V rms, V_D = 0 (see Note 3)	TISP7015L1 TISP7038L1		24 17		pF

NOTE 3: Value for any terminal pair, three-terminal guarded measurement with zero voltage bias on the unmeasured terminal.

Thermal Characteristics

Parameter		Test Conditions	Min	Typ	Max	Unit
$R_{\Theta JA}$	Junction to free air thermal resistance	P_{tot} = 0.8 W, T_A = 25 °C, 5 cm^2, FR4 PCB			170	°C/W

Parameter Measurement Information

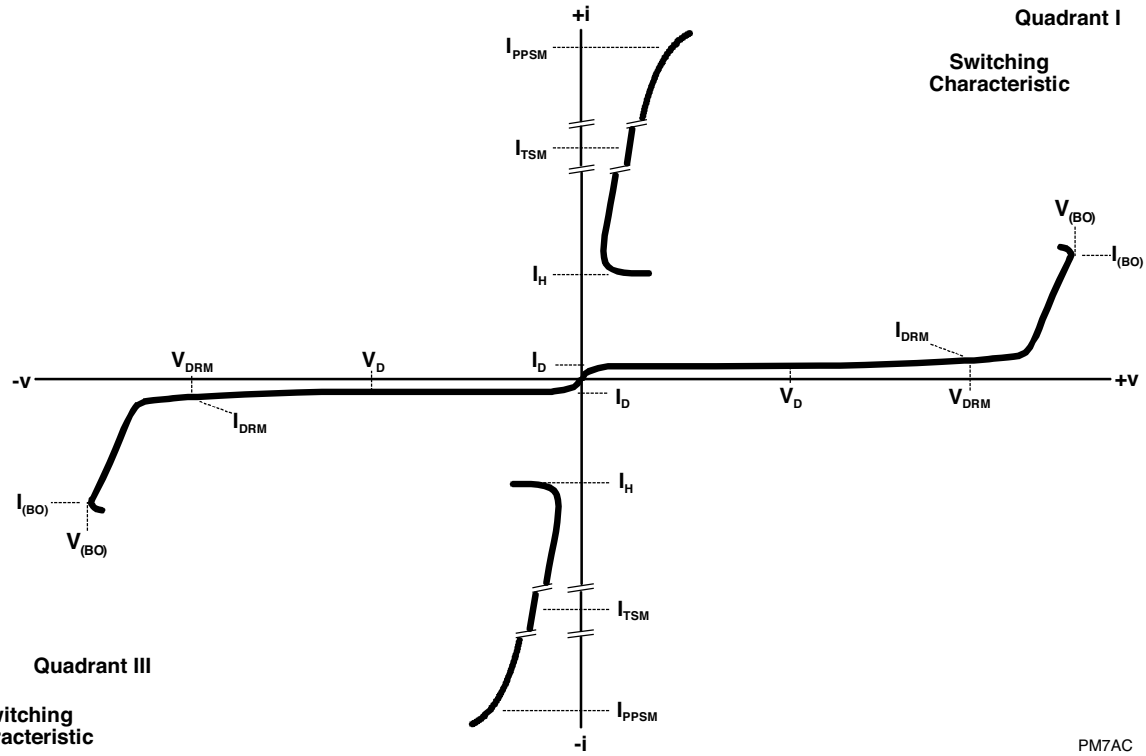

Figure 1. Voltage-Current Characteristic for any Terminal Pair

Typical Characteristics

OFF-STATE CURRENT vs JUNCTION TEMPERATURE

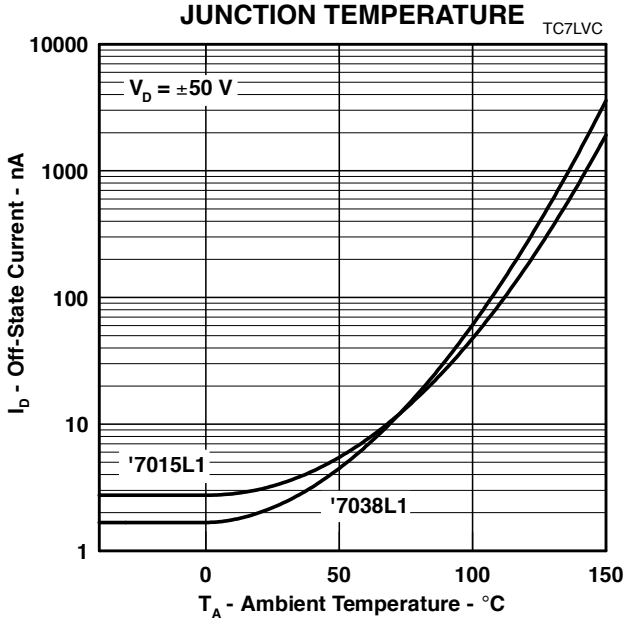

Figure 2.

NORMALIZED BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

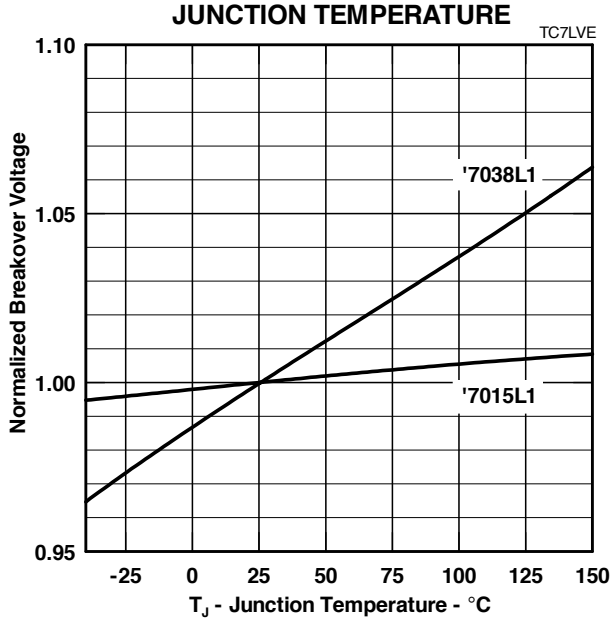

Figure 3.

ON-STATE CURRENT vs ON-STATE VOLTAGE

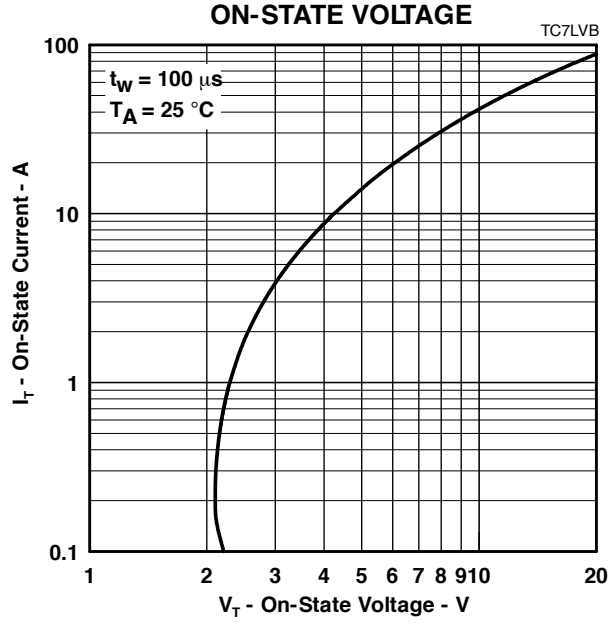

Figure 4.

NORMALIZED HOLDING CURRENT vs JUNCTION TEMPERATURE

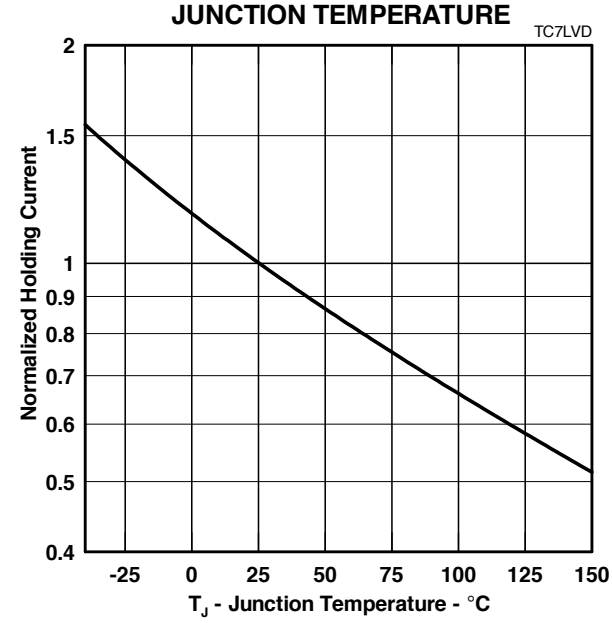

Figure 5.

Typical Characteristics

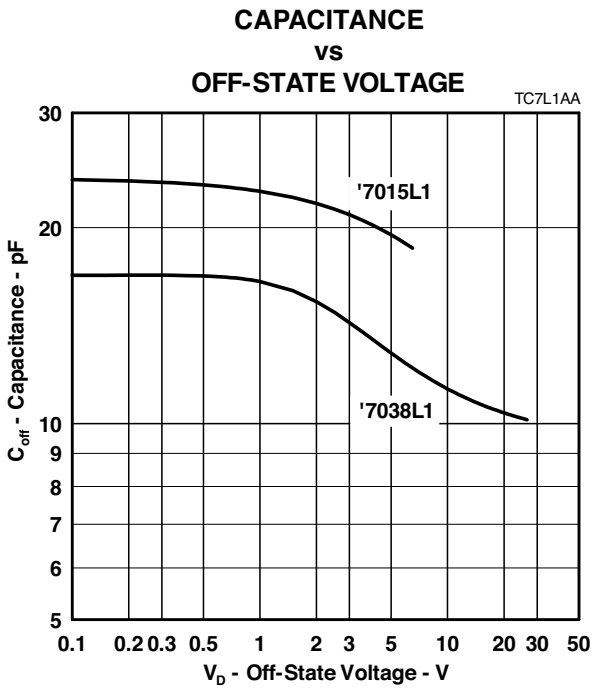

Figure 6.

Rating and Thermal Information

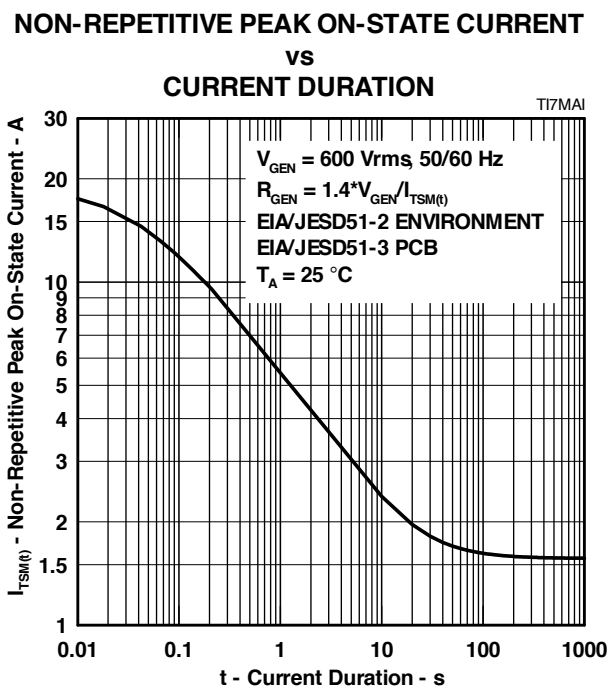

Figure 7.

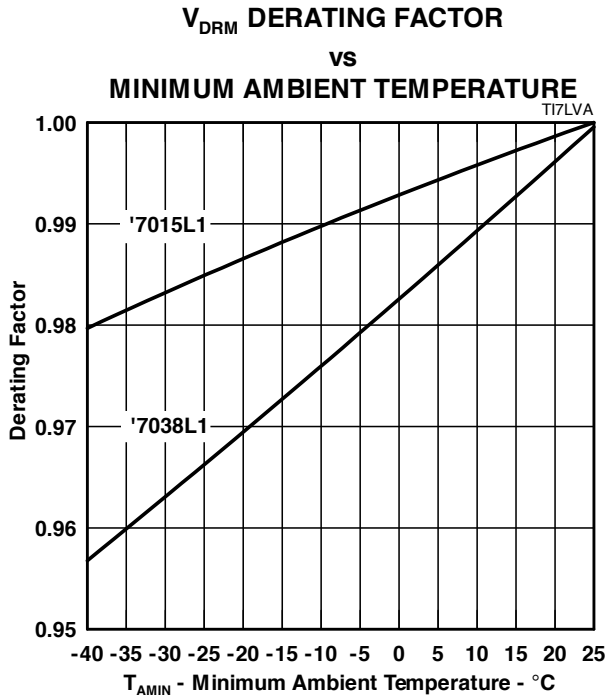

Figure 8.

MECHANICAL DATA

Device Symbolization Code

Devices will be coded as below.

Device	Symbolization Code
TISP7015L1DR-S	7015L1
TISP7038L1DR-S	7038L1

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