

Features

- * Protects USB DP, DM, and ID Pins operating up to $\pm 5V$
- * Protects USB VBus operating up to 26V
- * Low capacitance ($< 0.5pF$) on DP, DM, and ID Pins
- * Low clamping voltage
- * DM, and ID Pins
- * Solid-state silicon-avalanche technology
- * ESD and surge protection for USB Voltage Bus to
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 30kV$
Contact discharge: $\pm 30kV$
 - IEC61000-4-5 (Lightning) 80A (8/20 μs)
 - IEC61000-4-4 (EFT) 40A (5/50 μs)
- * ESD protection for USB data lines to
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 15kV$
Contact discharge: $\pm 15kV$
- * RoHS Compliant

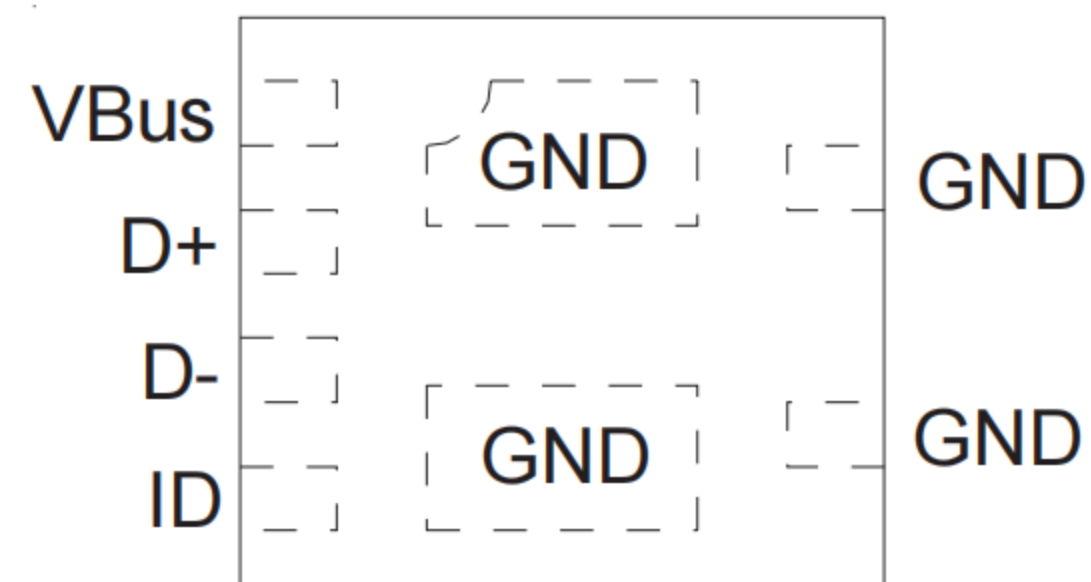
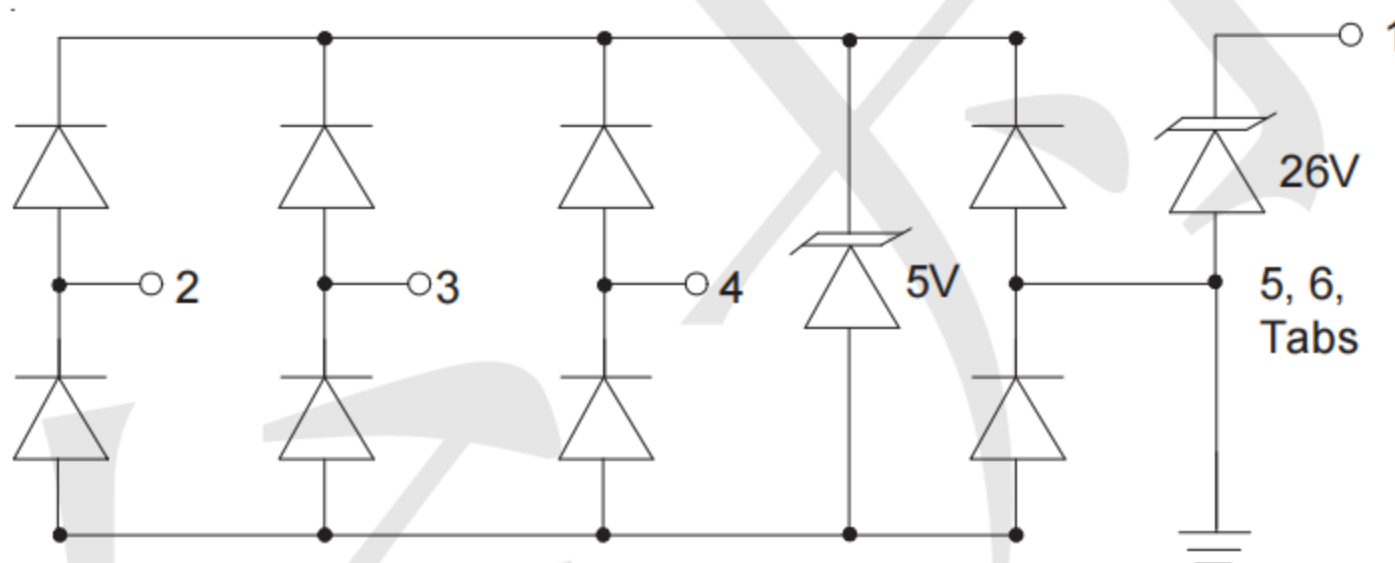
Mechanical Characteristics

- * Package: SLP2018P6 Package
- * Lead Finish: Matte Tin
- * Case Material: "Green" Molding Compound.
- * UL Flammability Classification Rating 94V-0
- * Moisture Sensitivity: Level 3 per J-STD-020
- * Terminal Connections: See Diagram Below
- * Shipping Qty :10000 /13Inch Tape & Reel

Applications

- * USB 2.0
- * USB OTG
- * uUSB

Dimensions and Pin Configuration



Marking:

56P
. XX

"56P" is part number, fixed
"XX" is Internal code

Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

DP, DM, USB ID TVS

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	60	W
Peak Pulse Current (8/20μs)	IPP	3	A
ESD per IEC 61000-4-2 (Air)	VESD	±15	kV
ESD per IEC 61000-4-2 (Contact)		±15	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

VBus TVS

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	3000	W
Peak Pulse Current (8/20μs)	IPP	80	A
ESD per IEC 61000-4-2 (Air)	VESD	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

VBus TVS (Pin 1)

Pin 1 to GND

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			26	V	
Breakdown Voltage	VBR	28	30	31	V	IT = 1mA
Reverse Leakage Current	IR			0.3	μA	VRWM = 26V
Forward Voltage	VF		0.8	1.2	V	IF=10mA
Clamping Voltage	VC			35	V	I _{PP} = 10A (8 x 20μs pulse)
Clamping Voltage	VC		40	45	V	I _{PP} = 58A (8 x 20μs pulse)
Junction Capacitance	CJ			900	pF	VR = 0V, f = 1MHz

DM, DP, USB ID (Pins 2, 3, 4)

Pin 4, 5, or 6 to GND

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6	9	11	V	IT = 1mA
Reverse Leakage Current	IR			0.1	μA	VRWM = 5 V
Forward Voltage	VF		0.8	1.2	V	IF=10mA
Clamping Voltage	VC			15	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	VC			20	V	I _{PP} = 3 A (8 x 20μs pulse)
Junction Capacitance	CJ		0.3	0.5	pF	VR = 0V, f = 1MHz

Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)

Fig1. 8/20 μs Pulse Waveform

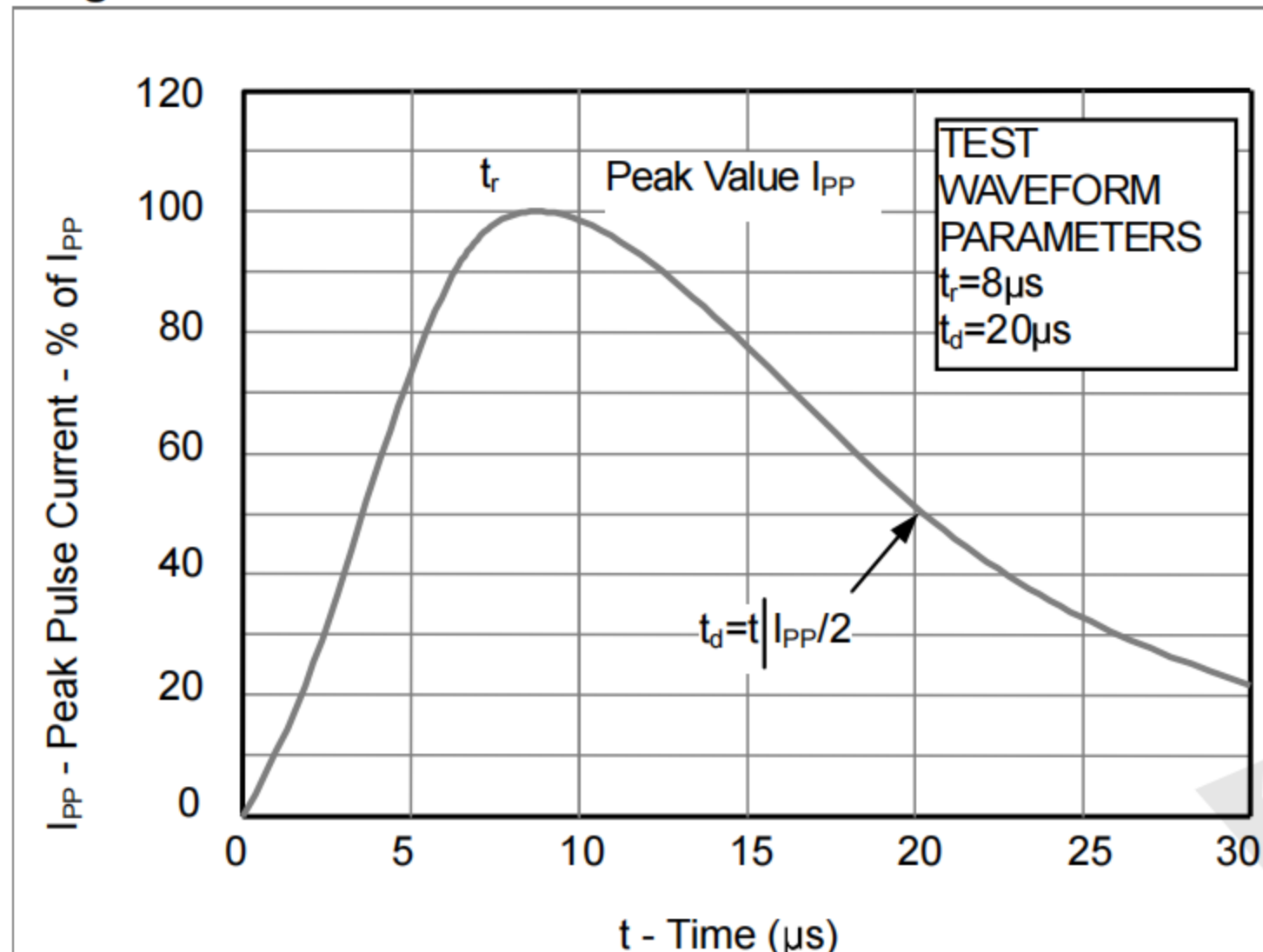


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

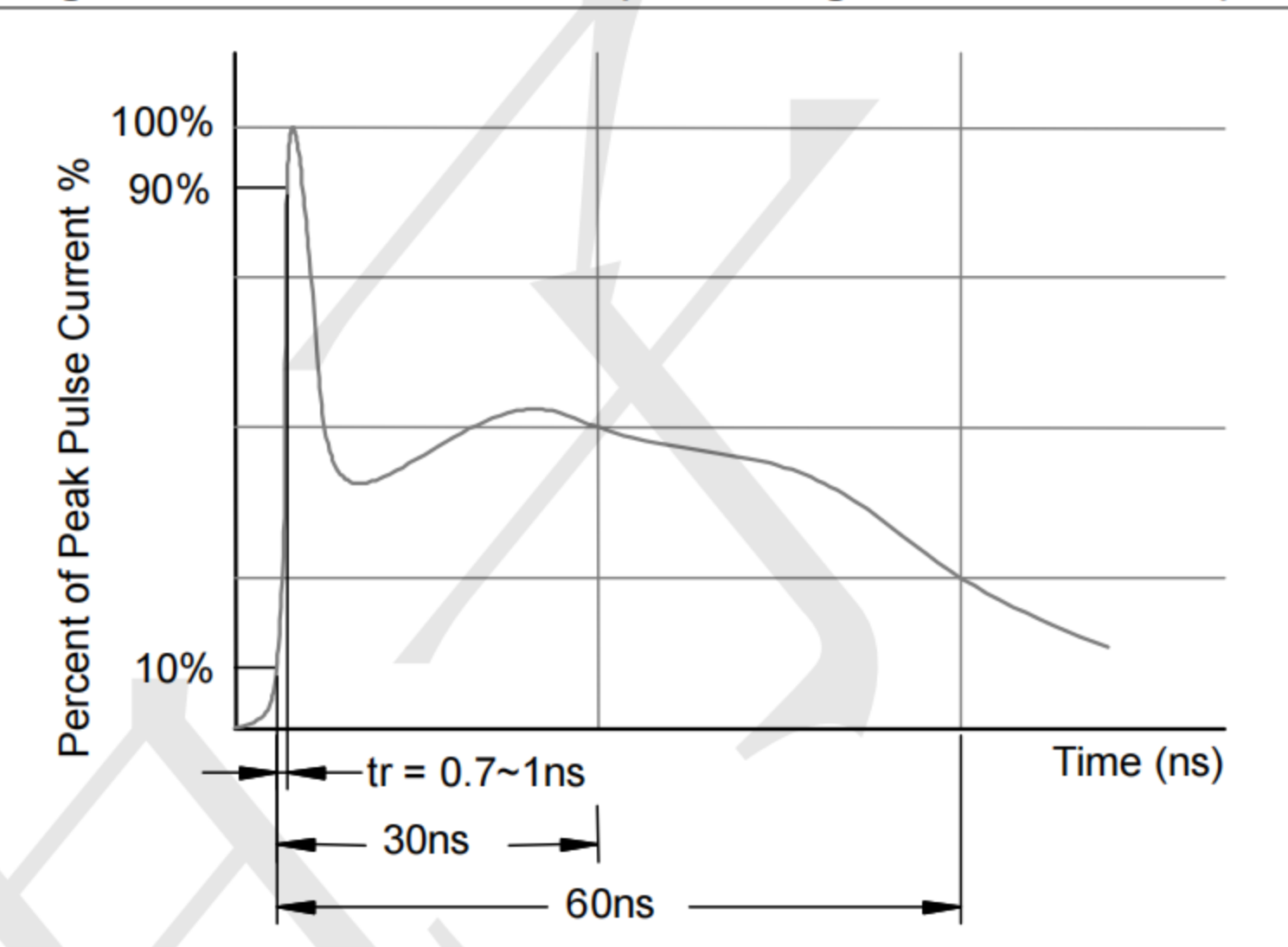
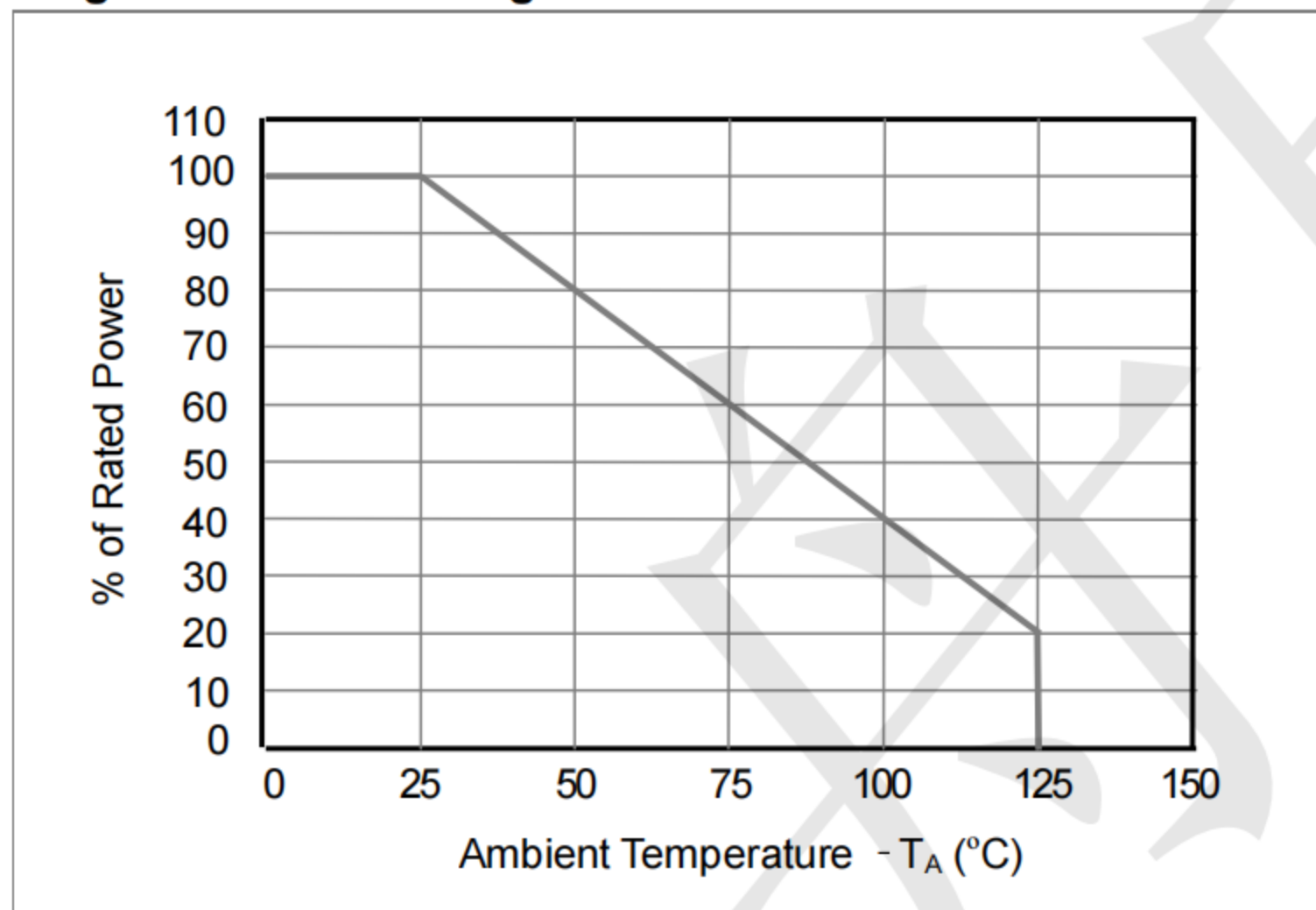
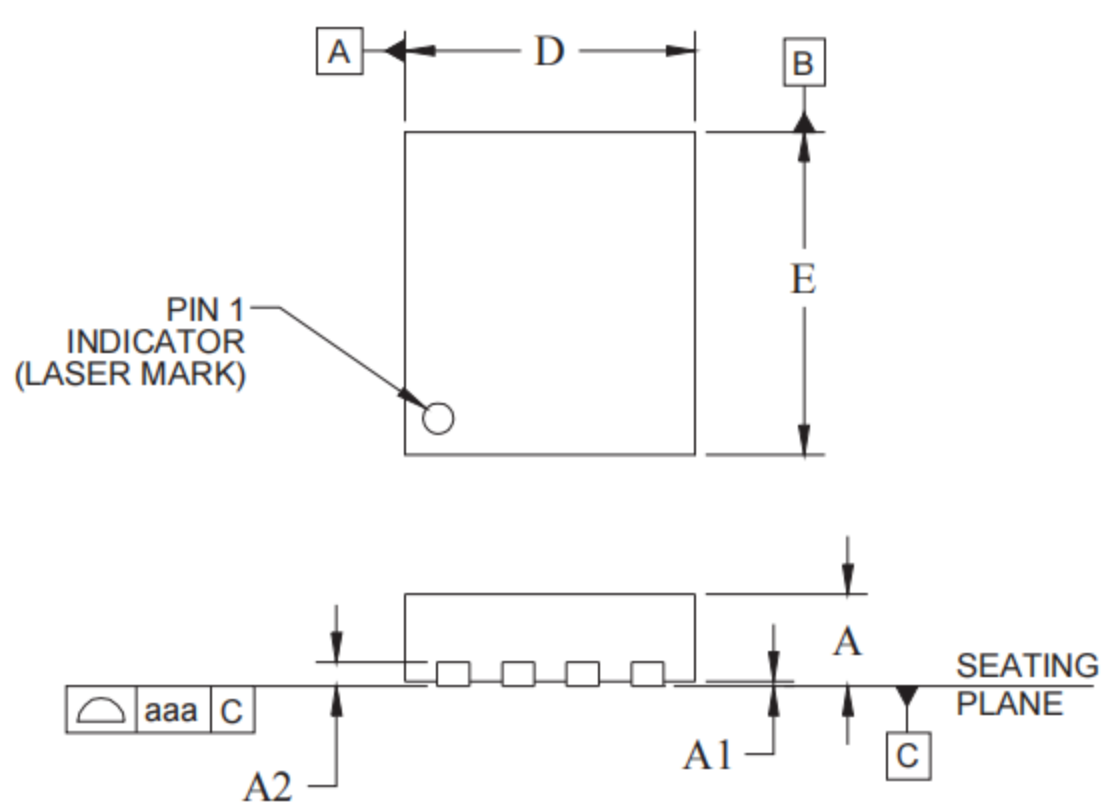


Fig3. Power Derating Curve



Outline Drawing - SLP2018P6



DIM	DIMENSIONS		
	MIN	NOM	MAX
A	0.50	0.575	0.65
A1	0.00	0.03	0.05
A2	(0.127)		
b	0.15	0.20	0.25
D	1.70	1.80	1.90
E	1.90	2.00	2.10
D1	0.30	0.45	0.55
E1	0.69	0.84	0.94
e	0.40 BSC		
e1	0.80 BSC		
L	0.25	0.30	0.35
N	6		
aaa	0.08		
bbb	0.10		

