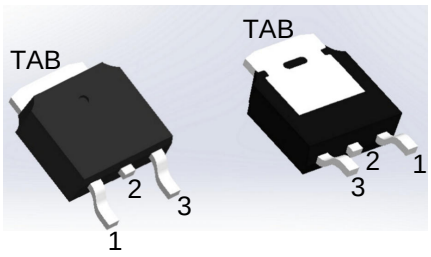
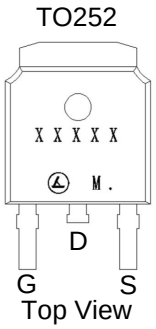
S-LP20N10D2

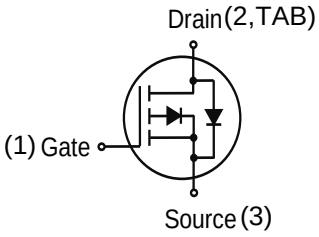
100V P-Channel Power MOSFET





1. FEATURES

- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S-prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



2. APPLICATIONS

- Power Tools
- DC−DC conversion
- Motor Control

3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
S-LP20N10D2	P20N10D2	2500pcs/Tape&Reel

4. MAXIMUM RATINGS

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDS	-100	V
Gate-to-Source Voltage		VGS	± 20	V
Continuous Drain Current(Note 1)	TA=25℃	ID	-4	A
	TA=100℃		-2.6	
Pulsed Drain Current(Note 2)	TA=25℃	IDM	-16	A
Continuous Drain Current	TC=25℃	ID	-20	A
	TC=100℃		-12	
Pulsed Drain Current	TC=25℃	IDM	-80	A
Avalanche Current		IAS	-9.6	A
Avalanche Energy(L=0.1mH)		EAS	4.6	mJ
Power Dissipation(Note 1)	TA=25℃	PD	2.3	W
	TA=100℃		0.9	
Power Dissipation	TC=25℃		62.5	
	TC=100℃		25	
Operating Junction and Storage Temperature Range		TJ/TSTG	-55~+150	℃

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Ambient(Note 1)	RθJA	55	℃/W
Junction-to-Case	RθJC	2	

Note:1.Surface mounted on "1.5in x 1.5in" FR4 board using 1*1 in pad, 2 oz Cu.

2.Pulse width limited by maximum junction temperature.

6. ELECTRICAL CHARACTERISTICS

Characteristic		Symbol	Min.	Typ.	Max.	Unit
STATIC						
Drain–Source Breakdown Voltage (VGS = 0 V, ID = -250 μA)		VBRDSS	-100	-	-	V
Gate Threshold Voltage (VDS = VGS , ID = -250 μA)		VGS(th)	-1.2	-	-2.5	V
Gate-Body leakage current (VDS = 0 V, VGS = ±20 V)		IGSS	-	-	±100	nA
Zero Gate Voltage Drain Current (VDS = -80 V, VGS = 0 V)		IDSS	-	-	-1	μA
Drain-to-Source On-Resistance (Note 3) (VGS = -10 V, ID = -3 A) (VGS = -4.5 V, ID = -2 A)		RDS(on)	- -	75 82	100 115	mΩ
DYNAMIC						
Input Capacitance	(VGS = 0 V, VDS = -50 V, f = 100KHz)	Ciss	-	2824	-	pF
Output Capacitance		Coss	-	75	-	
Reverse Transfer Capacitance		Crss	-	60	-	
Total Gate Charge	(VDS = -50 V,VGS = -10 V,ID = -8 A)	Qg	-	48	-	nC
Gate Source Charge		Qgs	-	7.5	-	
Gate Drain Charge		Qgd	-	8	-	
Turn-On DelayTime	(VDD=-50 V,RL = 12.5 Ω,ID = -4 A,VGEN = -10 V, RG = 6.2 Ω)	td(on)	-	15	-	ns
Turn-On Rise Time		tr	-	11	-	
Turn-Off DelayTime		td(off)	-	100	-	
Turn-Off Fall Time		tf	-	45	-	
Gate Resistance (VDS = 0 V,VGS = 0 V,f = 1.0MHz)		Rg	-	4	-	Ω
Diode characteristics						
Continuous Current TC =25° C		IS	-	-	-20	A
Plused Current TC =25° C		ISM	-	-	-80	A
Diode Forward Voltage (IS = -2 A,VGS = 0 V)		VSD	-	-	-1.2	V
Reverse Recovery Time (VR=-50V,IF=-2A,dIF/dt=100A/us)		trr	-	30	-	ns
Reverse Recovery Charge (VR=-50V,IF=-2A,dIF/dt=100A/us)		Qrr	-	25	-	nC
Reverse Recovery Current (VR=-50V,IF=-2A,dIF/dt=100A/us)		IRRM	-	-1.7	-	A

3.Pulse test: PW ≤ 300us duty cycle ≤ 2%.

7. ELECTRICAL CHARACTERISTICS CURVES

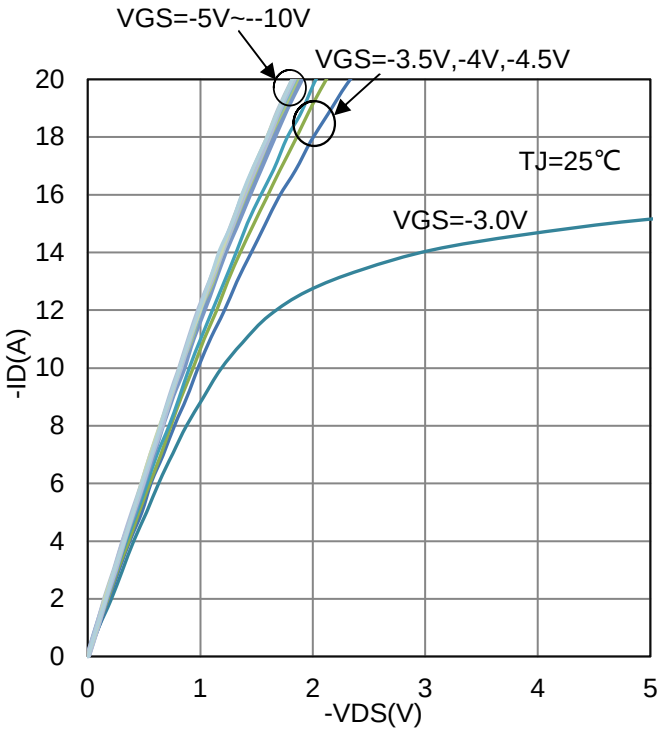


Figure 1.-ID vs. -VDS

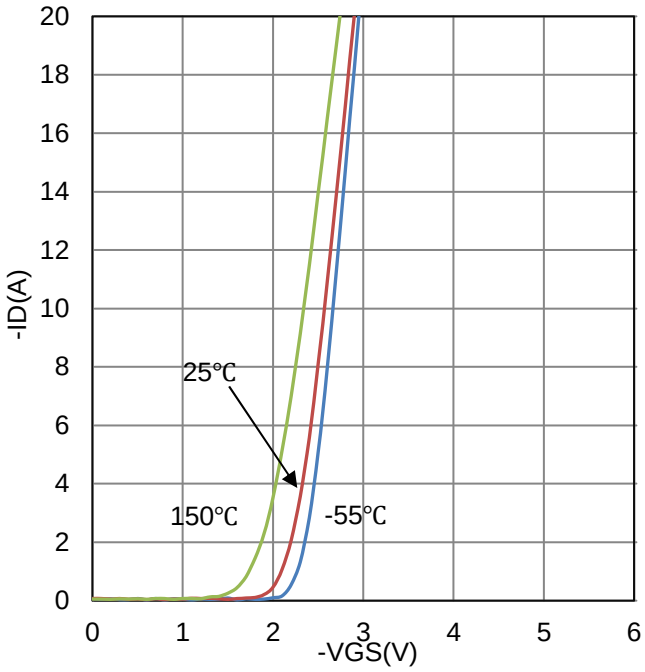


Figure 2.-ID vs. -VGS

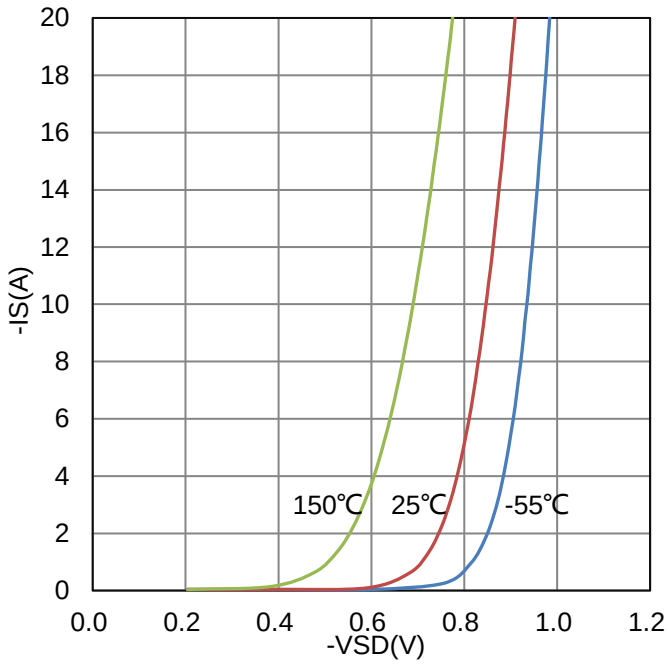


Figure 3.-IS vs. -VSD

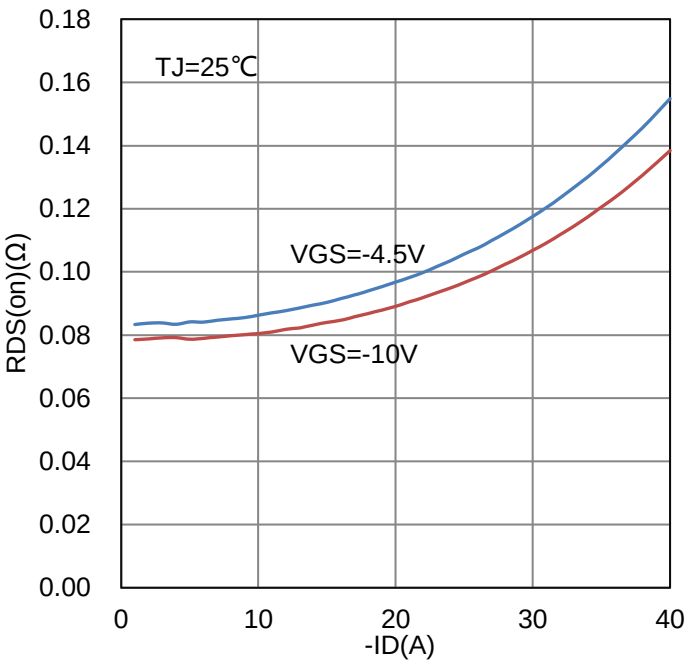


Figure 4.RDS(on) vs.-ID

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

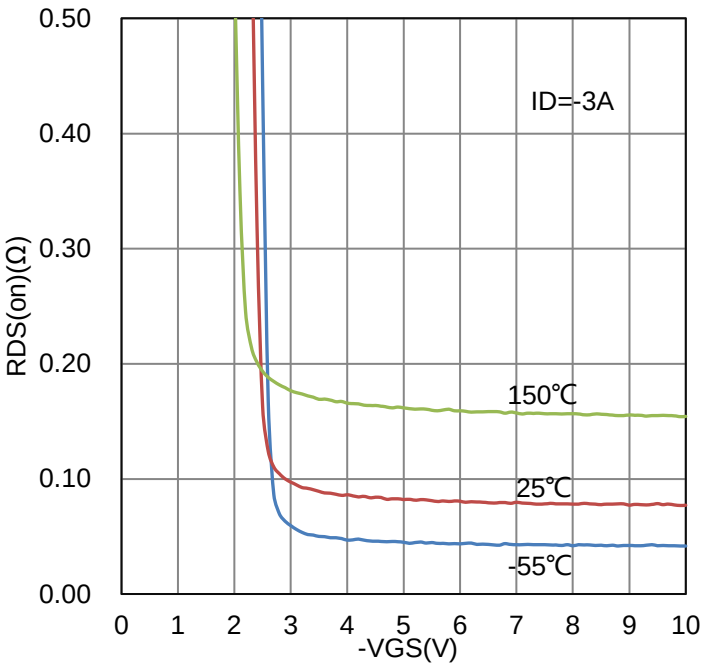


Figure 5.RDS(on) vs. -VGS

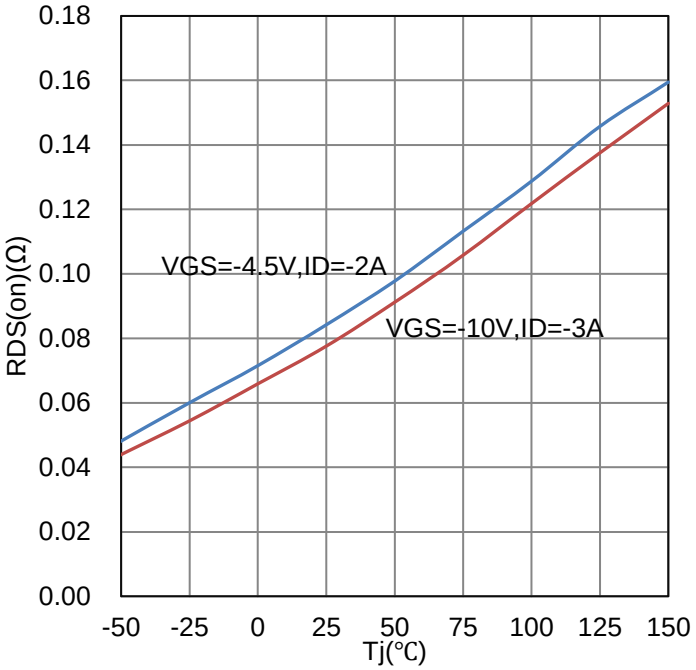


Figure 6.RDS(on) vs. Tj

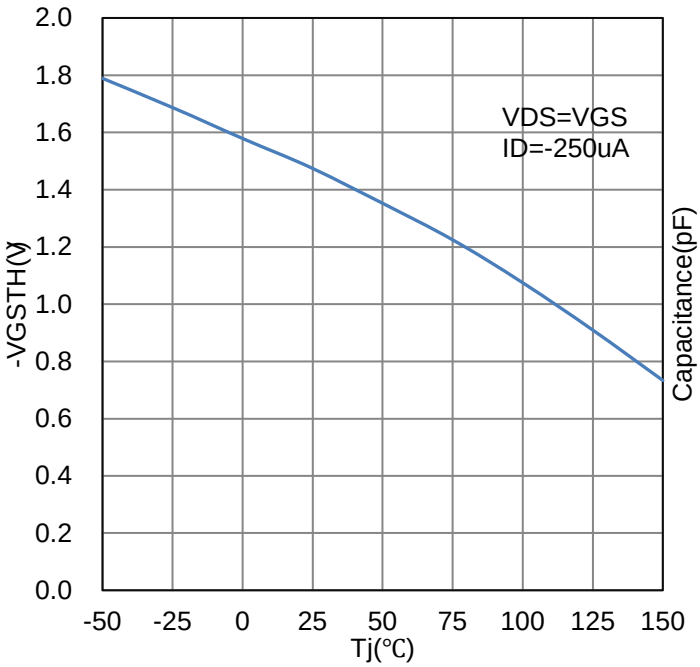


Figure 7.-VGSth vs. Tj

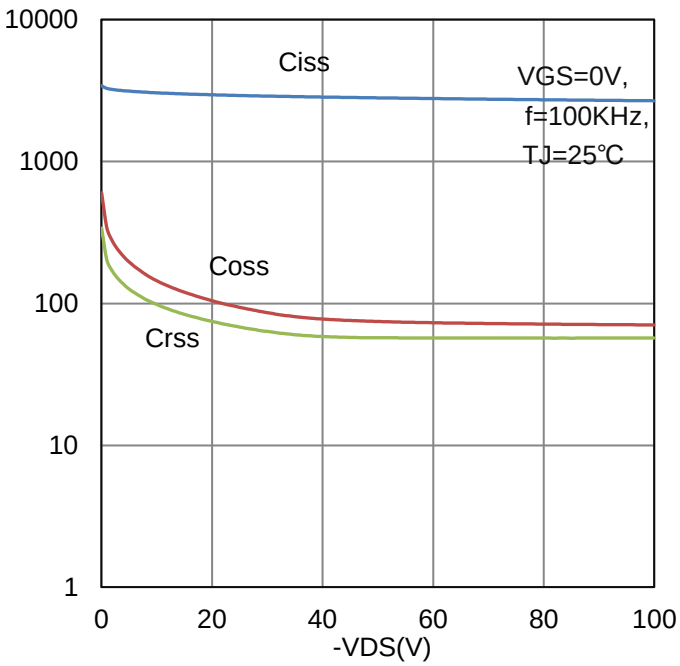


Figure 8.Capacitance

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

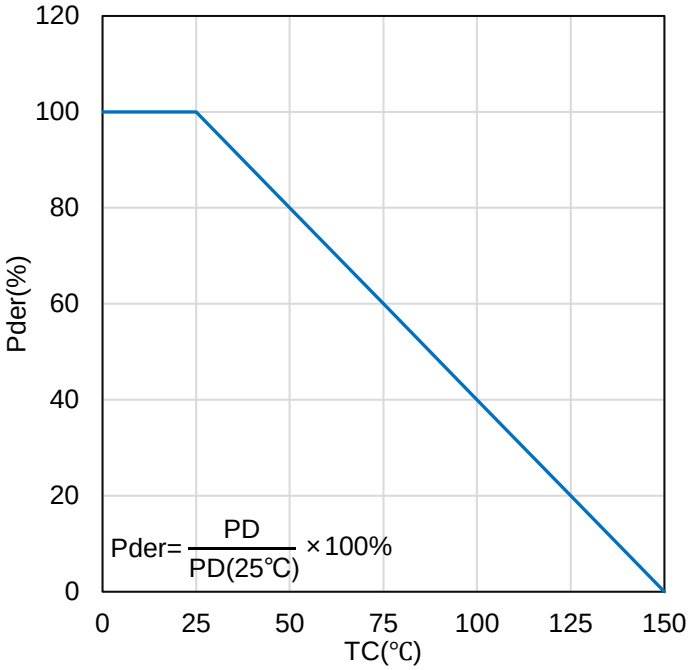


Figure 9.Normalized Derating Curve

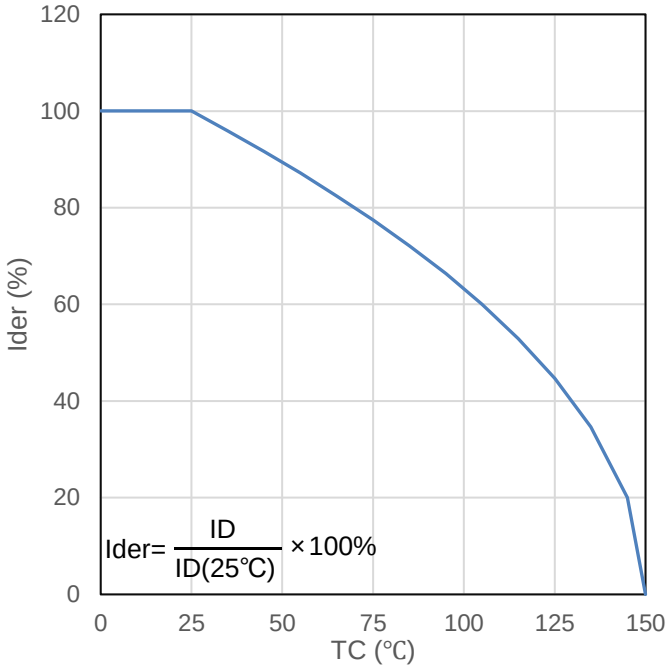


Figure 10.Normalized drain Current

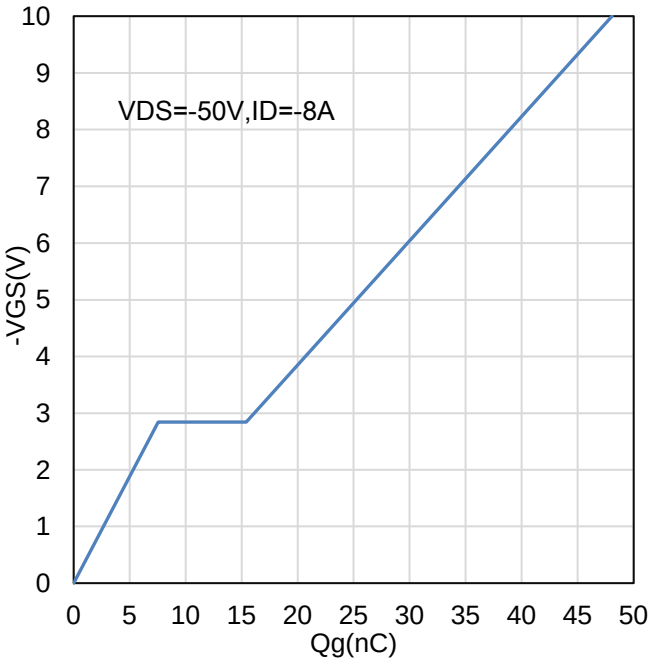


Figure 11.-VGS vs. Qg

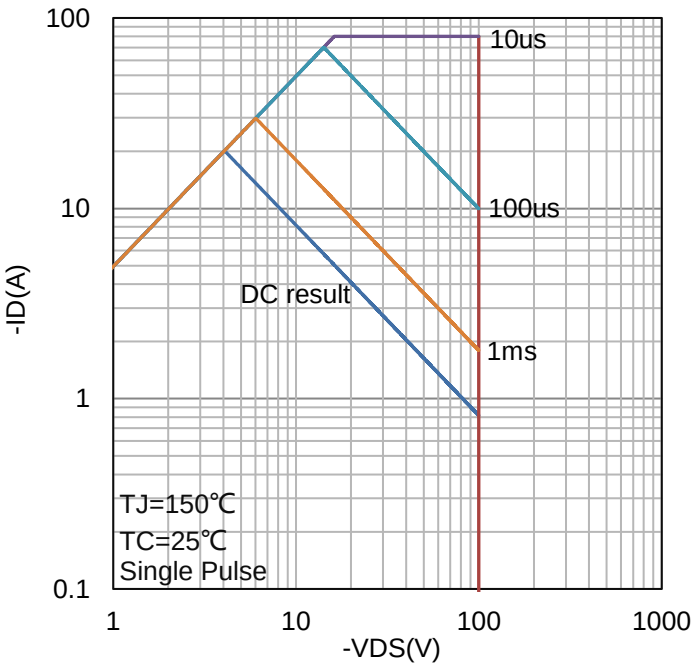


Figure 12.Safe Operating Area

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

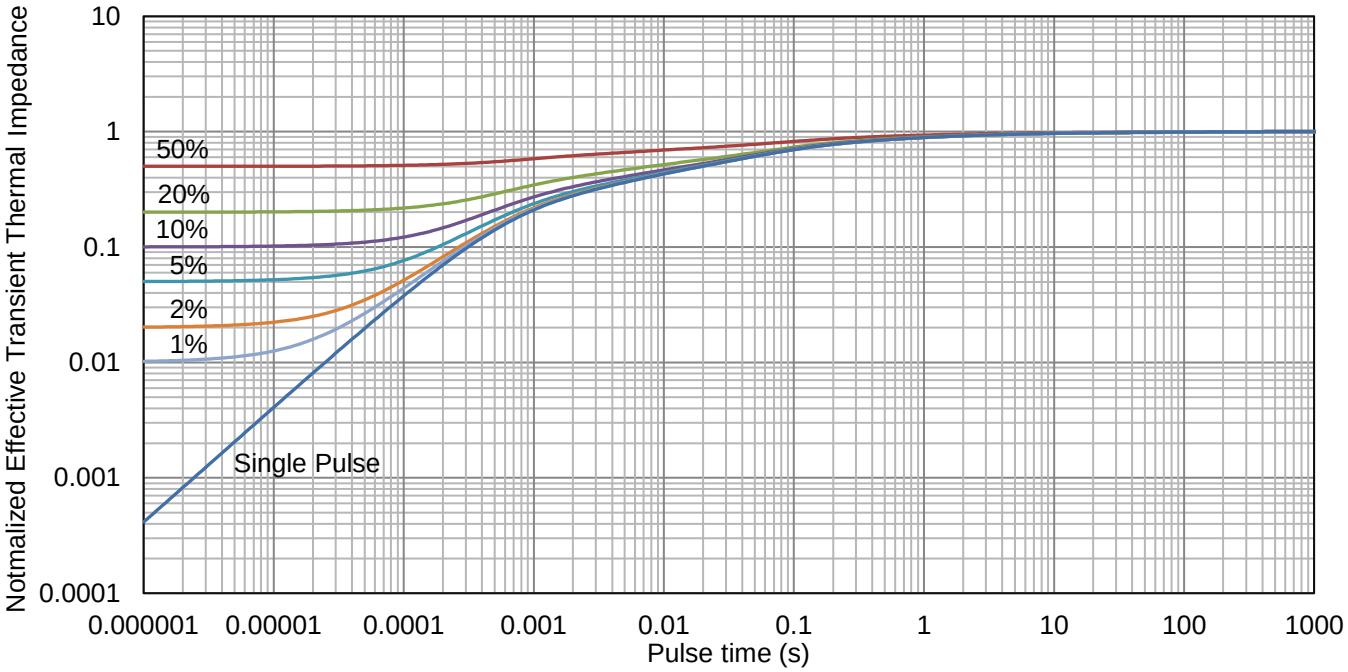
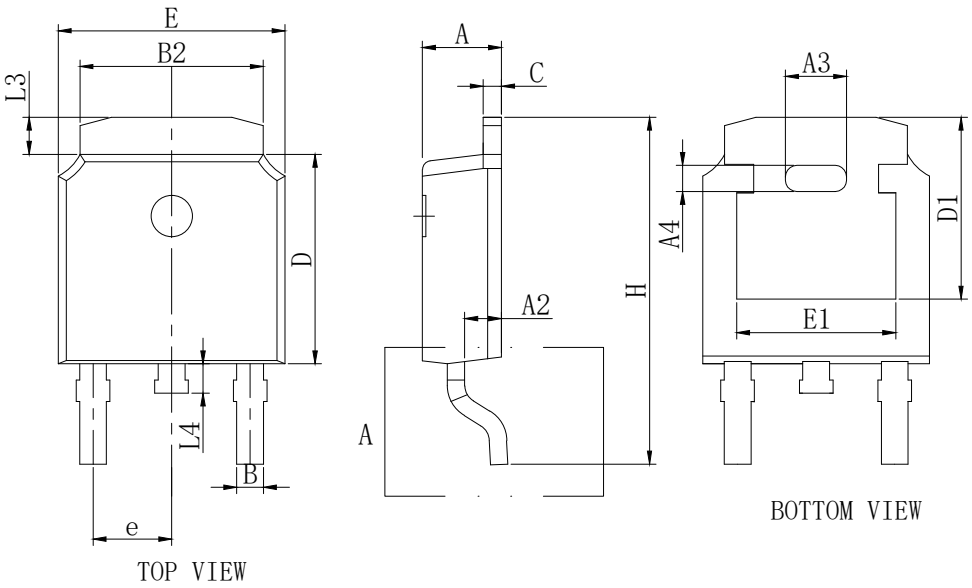
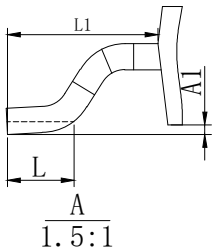


Figure 13.Thermal Response

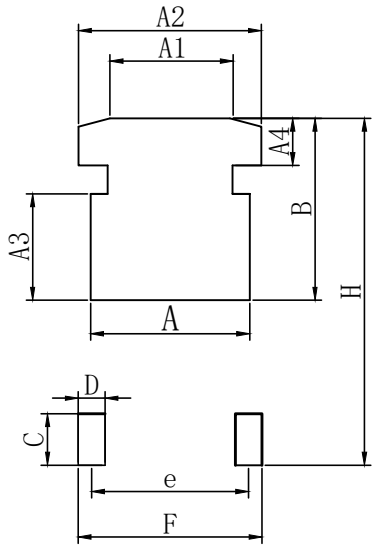
8.OUTLINE AND DIMENSIONS





DIM	MILLIMETERS		
	MIN	NOM	MAX
A	2.15	2.30	2.45
A1	0	-	0.20
A2	0.90	1.07	1.17
A3	1.58	1.78	1.98
A4	0.56	0.76	0.96
B	0.68	0.78	0.88
B2	5.20	5.33	5.46
C	0.49	-	0.58
D	5.90	6.10	6.30
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	4.83	5.03
e	2.286BSC		
H	9.8	10.10	10.4
L	1.09	1.29	1.49
L1	2.90REF		
L3	0.88	1.08	1.28
L4	0.55	0.80	1.05

9.SOLDERING FOOTPRINT



DIM	MIN(mm)
A	6.03
A1	4.50
A2	6.46
A3	4.10
A4	2.37
B	6.50
C	2.50
D	1.68
e	4.57(TYP)
H	12.35
F	6.25

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