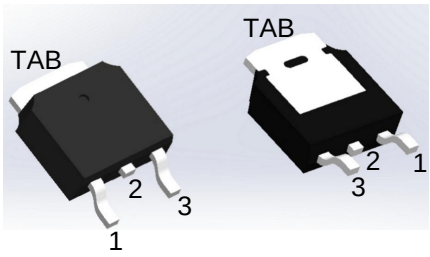
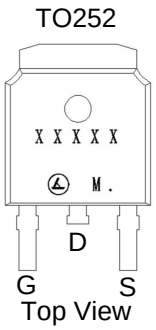
S-LP80N06D2

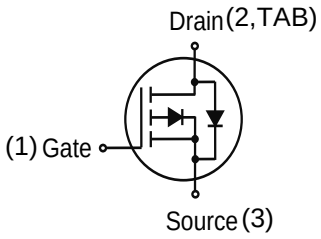
60V P-Channel Power MOSFET





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-LP80N06D2	P80N06D2	2500pcs/Tape&Reel

4. MAXIMUM RATINGS

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDS	-60	V
Gate-to-Source Voltage		VGS	± 20	V
Continuous Drain Current(Note 1)	TA=25℃	ID	-20	A
	TA=100℃		-12	
Pulsed Drain Current (Note 2)	TA=25℃	IDM	-80	A
Continuous Drain Current	TC=25℃	ID	-80	A
	TC=100℃		-51	
Pulsed Drain Current (Note 2)	TC=25℃	IDM	-320	A
Avalanche Current		IAS	56	A
Avalanche Energy(L=0.1mH)		EAS	157	mJ
Power Dissipation	TA=25℃	PD	2.5	W
	TA=100℃		1	
Power Dissipation	TC=25℃	PD	156	W
	TC=100℃		62.5	
Operating Junction and Storage Temperature Range		TJ/TSTG	-55~+150	℃

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Ambient(Note 1)	RθJA	50	℃/W
Junction-to-Case	RθJC	0.8	

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 to Source Breakdown Voltage (VGS = 0 V, ID = -250 μA)		BVDSS	-60	-	-	V
Gate Threshold Voltage (VDS = VGS , ID = -250 μA)		VGS(th)	-1.6	-2	-2.4	V
Gate-Body leakage current (VDS = 0 V, VGS = ±20 V)		IGSS	-	-	± 100	nA
Zero Gate Voltage Drain Current (VDS = -60 V, VGS = 0 V)		IDSS	-	-	-1	μA
Drain-to-Source On-Resistance(Note 3) (VGS = -10 V, ID = -6 A)		RDS(ON)	-	5.5	7	mΩ
Dynamic						
Total Gate Charge	(VDS = -30 V, VGS = -4.5 V,ID = -6 A)	Qg	-	42	-	nC
Gate to Source Charge		Qgs	-	16	-	
Gate to Drain Charge		Qgd	-	14	-	
Turn-on Delay Time	(VDD= -30 V,RL = 5 Ω,ID= -6 A, VGEN= -10 V RGEN = 6 Ω)	td(on)	-	27	-	nS
Rise Time		tr	-	18	-	
Turn-Off Delay Time		td(off)	-	155	-	
Fall Time		tf	-	53	-	
Input Capacitance	(VDS = -30 V, VGS = 0 V, f = 100KHz)	Ciss	-	5485	-	pF
Output Capacitance		Coss	-	916	-	
Reverse Transfer Capacitance		Crss	-	50	-	
Gate Resistance (VDS = 0 V,VGS = 0 V,f = 1.0MHz)		Rg	-	2.5	-	Ω
Diode characteristics						
Continuous Current TC =25° C		IS	-	-	-80	A
Plused Current TC =25° C		ISM	-	-	-320	A
Diode Forward Voltage (IS = -2 A,VGS = 0 V)		VSD	-	-0.7	-1.2	V
Reverse Recovery Time (VR=-30V,IF=-8A,dIF/dt=100A/us)		trr	-	75	-	ns
Reverse Recovery Charge (VR=-30V,IF=-8A,dIF/dt=100A/us)		Qrr	-	110	-	nC
Reverse Recovery Current (VR=-30V,IF=-8A,dIF/dt=100A/us)		IRRM	-	2.9	-	A

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

7. ELECTRICAL CHARACTERISTICS CURVES

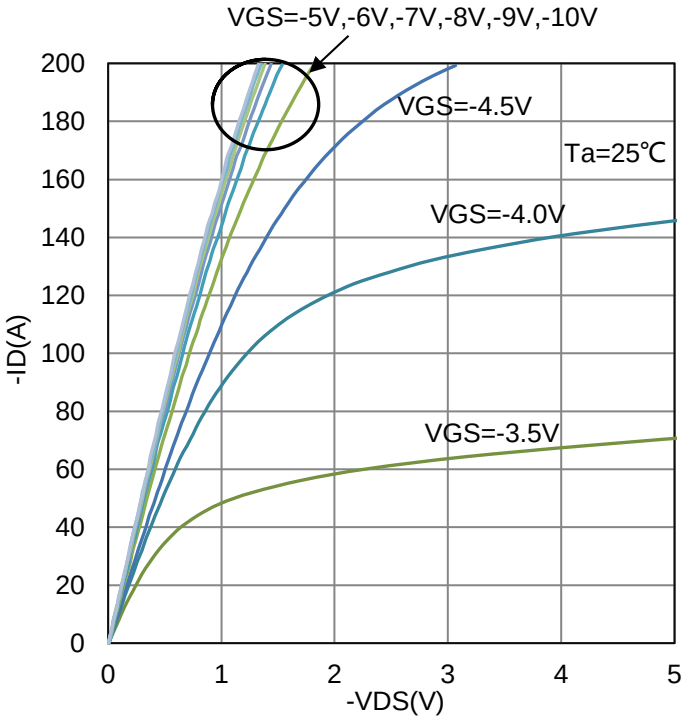


Figure 1.-ID vs. -VDS

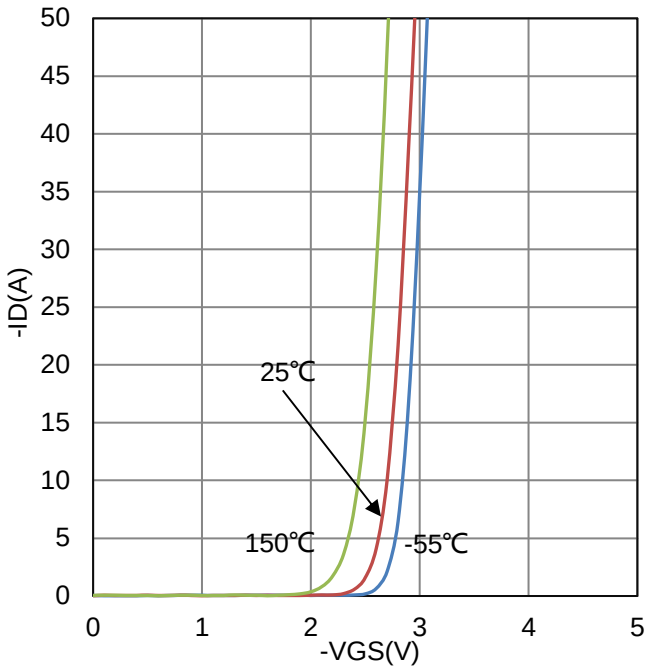


Figure 2.-ID vs. -VGS

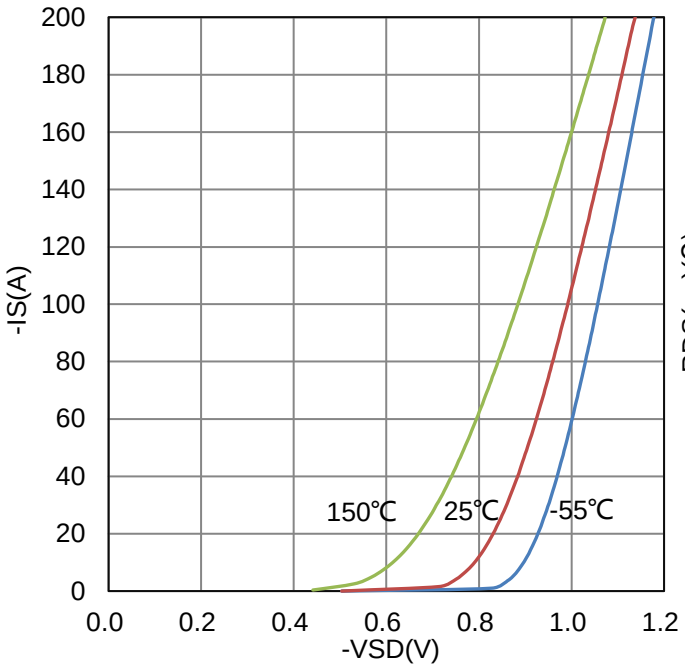


Figure 3.-IS vs. -VSD

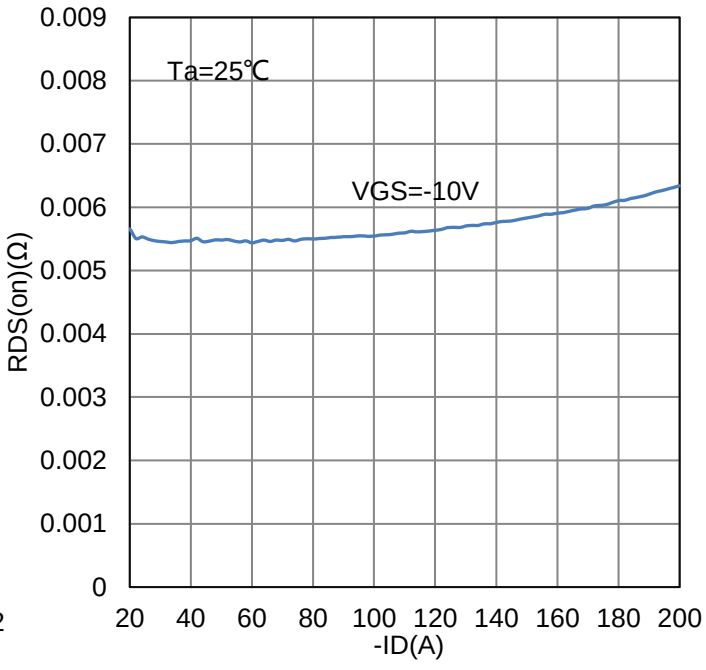


Figure 4.RDS(on) vs.-ID

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

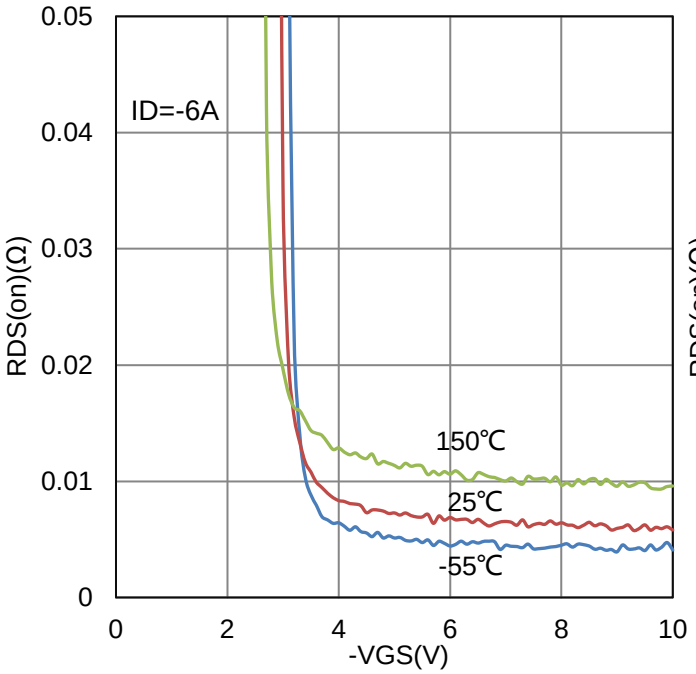


Figure 5.RDS(on) vs. -VGS

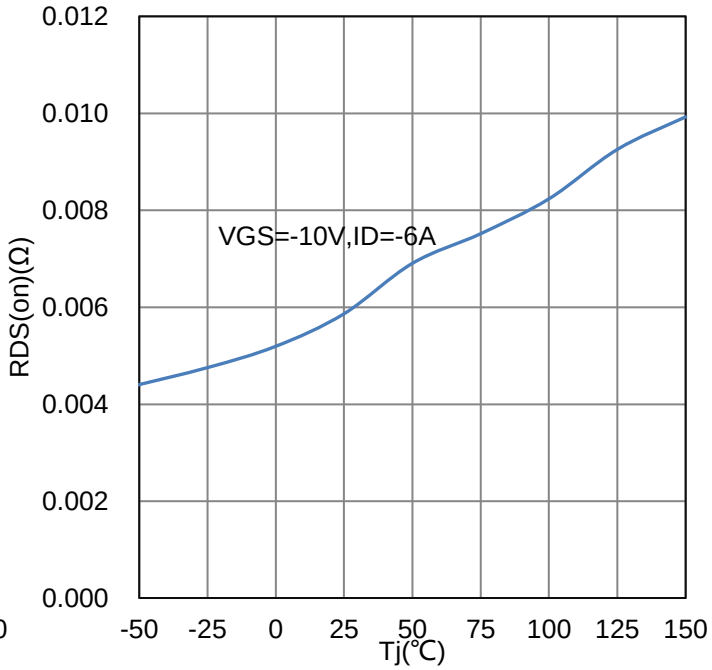


Figure 6.RDS(on) vs. Tj

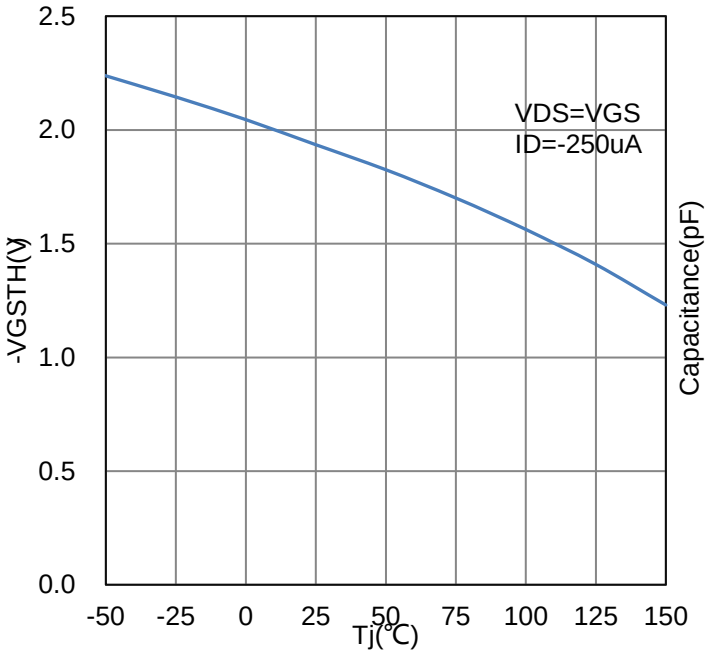


Figure 7.-VGSth vs. Tj

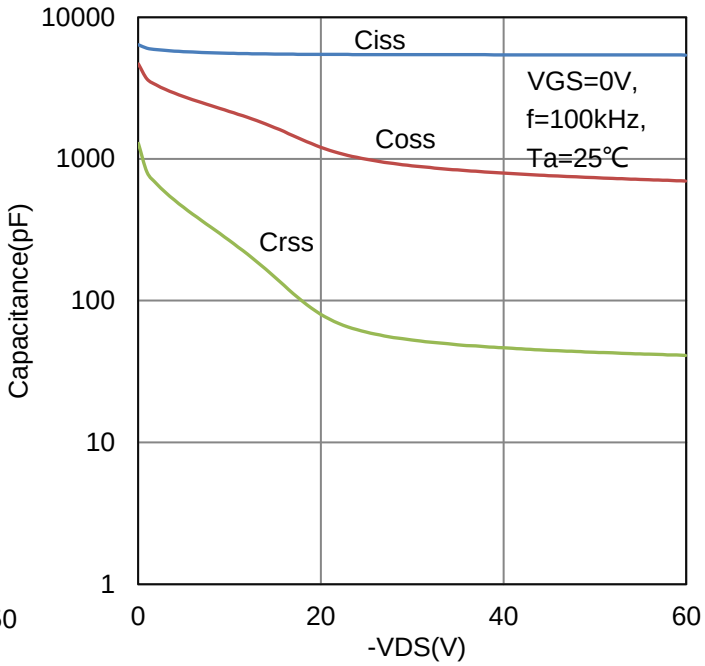


Figure 8.Capacitance

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

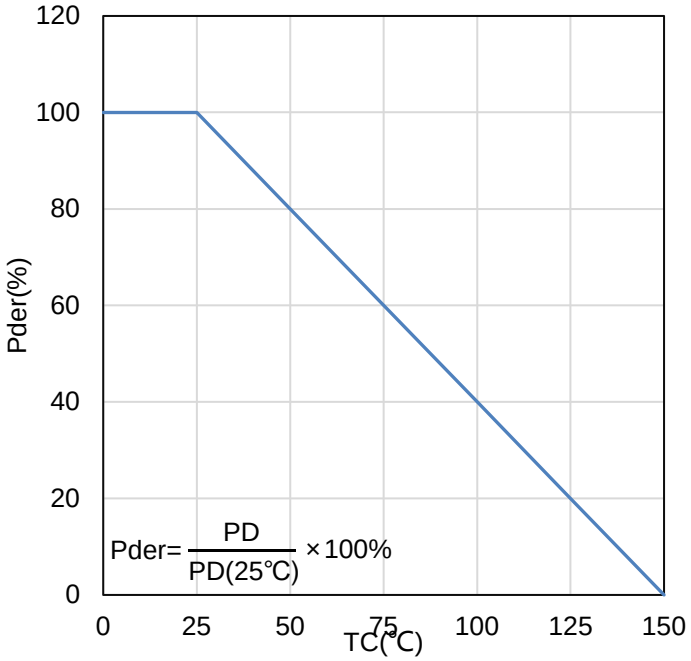


Figure 9.Normalized Derating Curve

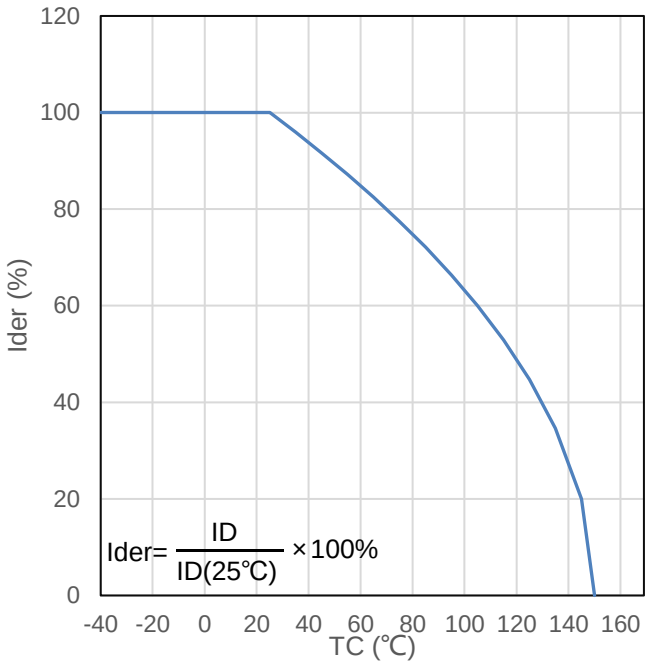


Figure 10.Normalized drain Current

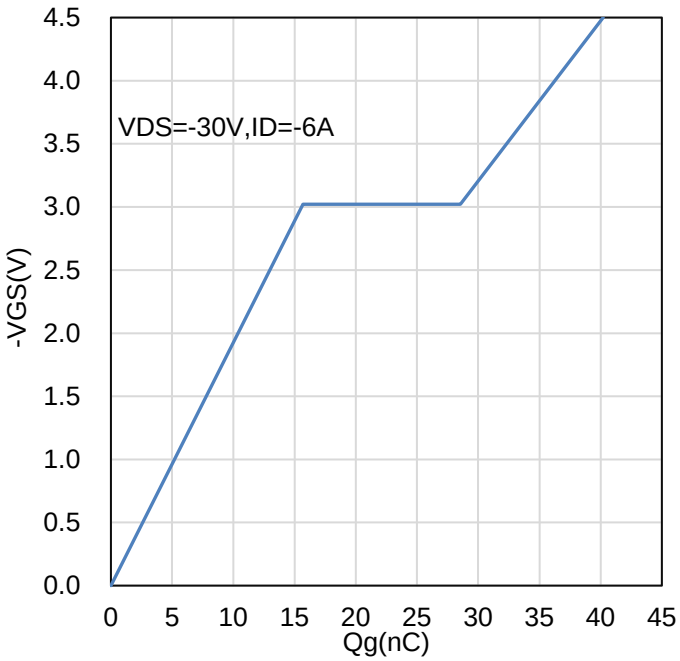


Figure 11.-VGS vs. Qg

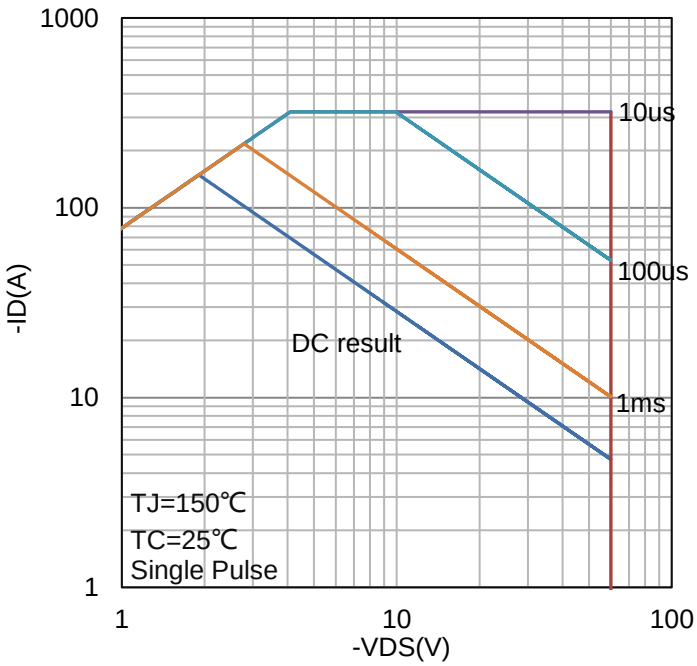


Figure 12.Safe Operating Area

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)

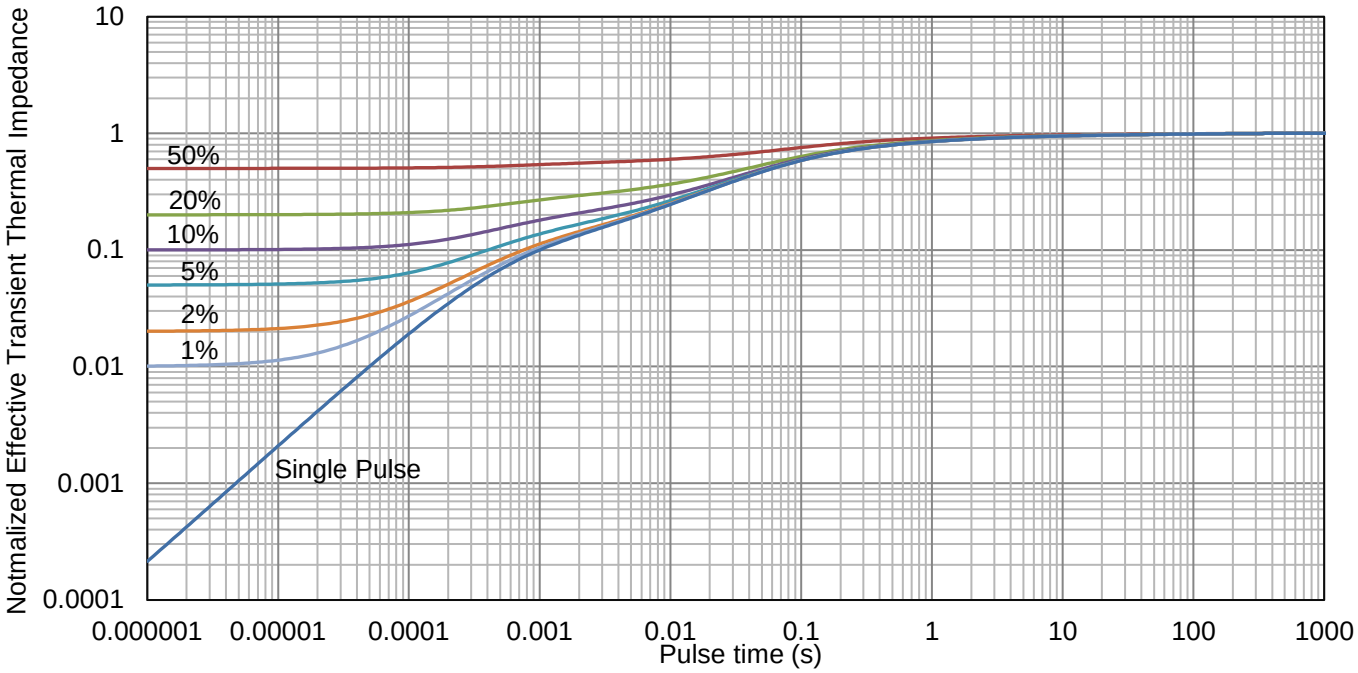
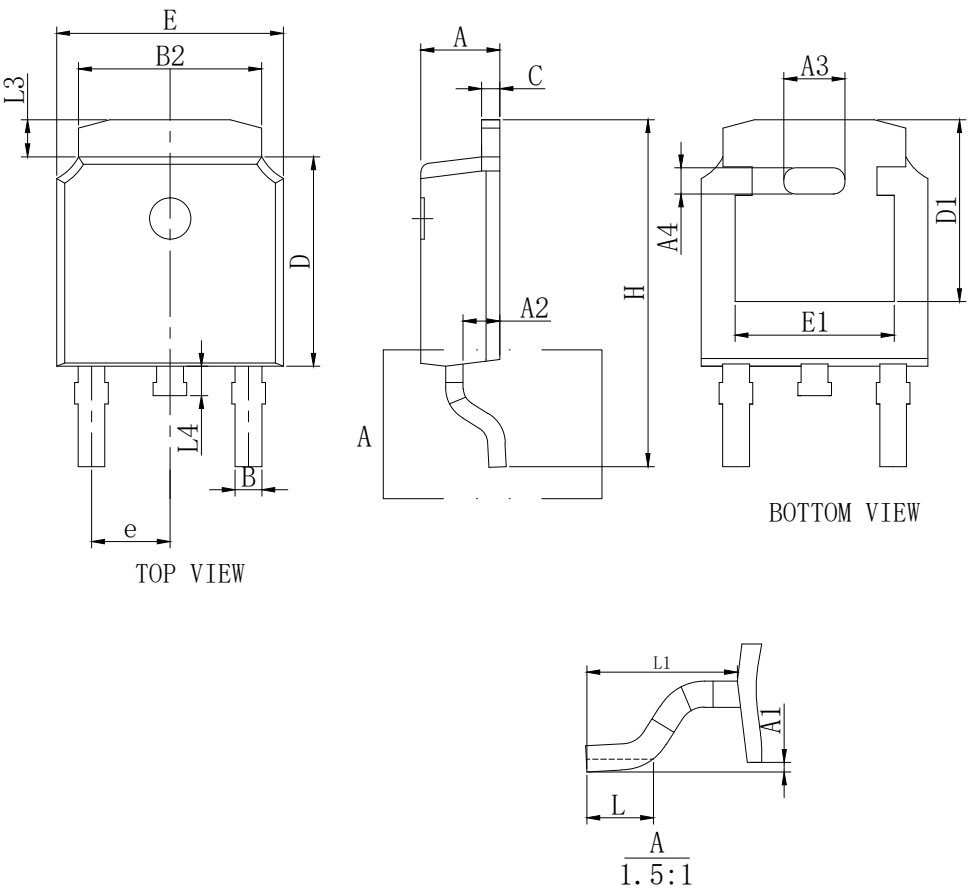


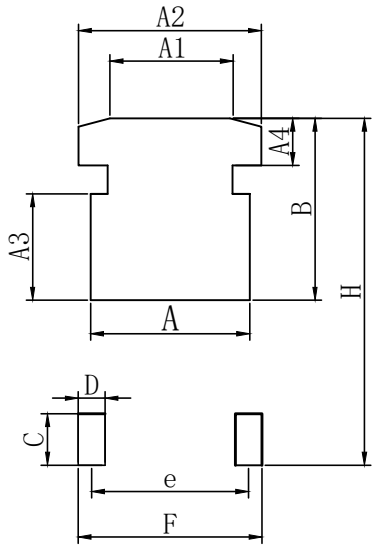
Figure 13.Thermal Response

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

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

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