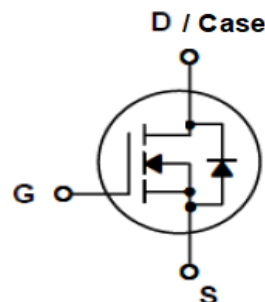


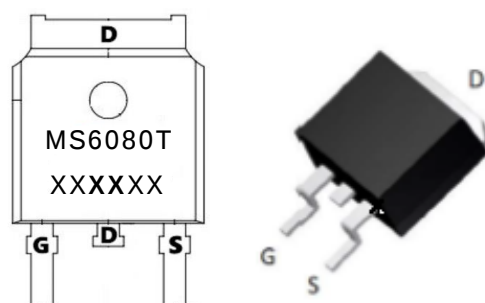
General Description

The MS6080T uses advanced trench technology to provide excellent RDS(ON), low gate charge. This device is suitable for use in Load Switch, PWM Application, Power management and general purpose applications.



Features

- Extremely Low RDS(on):
Typ. RDS(on) = 6.6mΩ @ V_{GS}=10V, I_D=80A
- Good stability and uniformity
- 100% avalanche tested
- Excellent package for good heat dissipation



TO-263-2L Package

Symbol	Parameter	Value	Units
V _{DS}	Drain-Source Voltage	60	V
I _D	Drain Current - Continuous (TC= 25°C)	80	A
	- Continuous (TC= 100°C)	52*	A
I _{DM}	Drain Current - Pulsed (Note 1)	320	A
V _{GS}	Gate-Source Voltage	± 20	V
E _{AS}	Single Pulsed Avalanche Energy (Note 2)	288	mJ
P _D	Power Dissipation (TC = 25°C)	122	W
T _J , T _{stg}	Operating and Storage Temperature Range	-55 to +175	°C

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Value	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	1.018	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	51.85	°C/W

Electrical Characteristics TC = 25°C unless otherwise noted

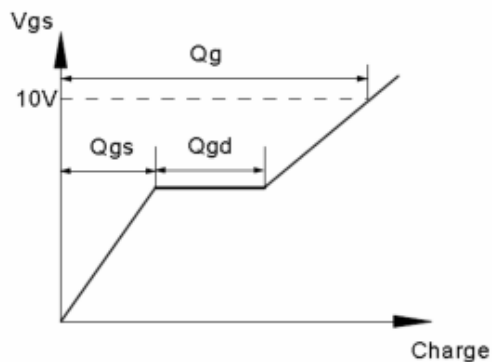
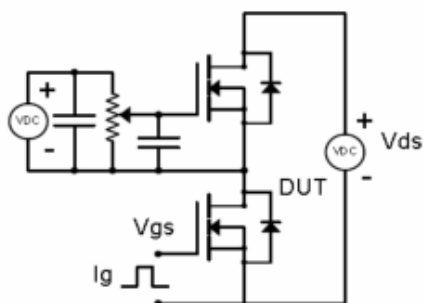
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60 V, V _{GS} = 0 V			1	μA
I _{GSSF}	Gate Leakage Current, Forward	V _{GS} = 20 V, V _{DS} = 0 V			100	nA
I _{GSSR}	Gate Leakage Current, Reverse	V _{GS} = -20 V, V _{DS} = 0 V			-100	nA
On Characteristics						
V _{GS(TH)}	Gate Threshold voltage	V _{DS} = V _{GS} , I _D = 250 uA	2	3	4	V
R _{DS(On)}	Drain-Source on-state resistance	V _{GS} = 10 V, I _D = 30 A		6.6	8.3	mΩ
g _{FS}	Forward Transconductance	V _{DS} = 5 V, I _D = 30 A	25	32		S
Dynamic Characteristics						
C _{iss}	Input capacitance	V _{DS} =30V, V _{GS} =0V, F=1.0Mhz		4200		pF
C _{oss}	Output capacitance			242		pF
C _{rss}	Reverse transfer capacitance			216		pF
Switching Characteristics						
t _{d(on)}	Turn On Delay Time	V _{DS} =30V, I _D =30A, V _{GS} =10V, R _G =1.8Ω (Note 3, 4)		8		ns
t _r	Rising Time			22		ns
t _{d(off)}	Turn Off Delay Time			28		ns
t _f	Fall Time			16		ns
Q _g	Total Gate Charge	V _{DS} =30V, I _D =30A, V _{GS} =10V (Note 3, 4)		73		nC
Q _{gs}	Gate-Source Charge			18		nC
Q _{gd}	Gate-Drain Charge			15		nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain-Source Diode Forward Current				80	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current				320	A
V _{SD}	Diode Forward Voltage	V _{GS} = 0 V, I _S = 30 A			1.2	V
T _{rr}	Reverse recovery time	I _S =30A, dI/dt = 100A/us		35		ns
Q _{rr}	Reverse recovery charge			51		nC

Notes:

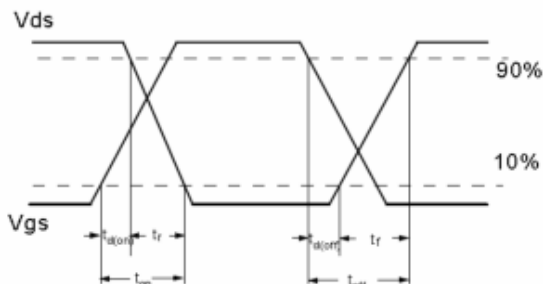
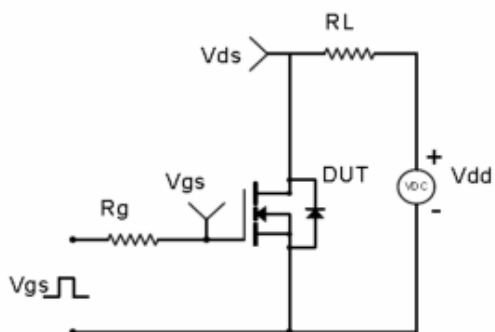
1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. $L = 0.5\text{ mH}, V_{DD} = 30\text{V}, V_{GS}=10\text{V}, R_G = 25\text{ }\Omega$, Starting $T_J = 25^\circ\text{C}$
3. $I_{SD} \leq I_{Max}, di/dt = 100\text{A/us}, V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$
4. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
5. Essentially independent of operating temperature

Test Circuit & Waveform

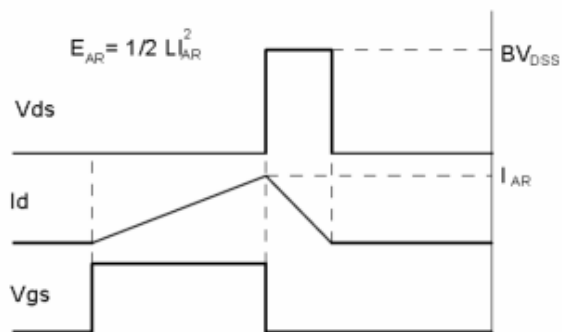
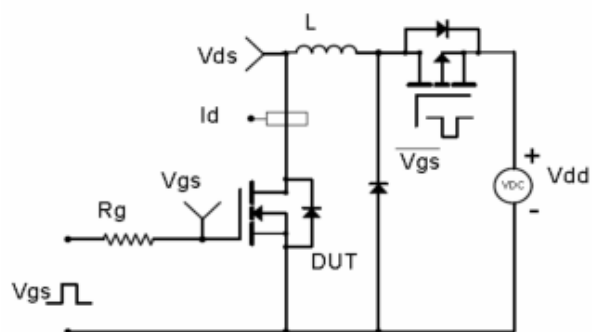
Gate Charge Test Circuit & Waveform



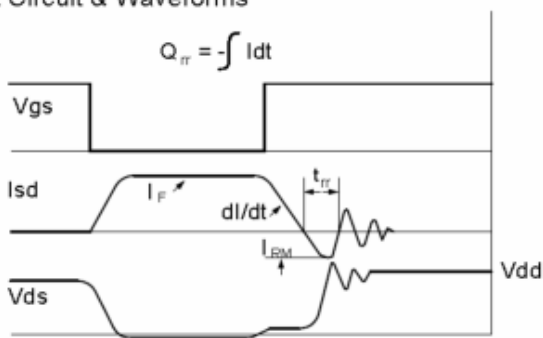
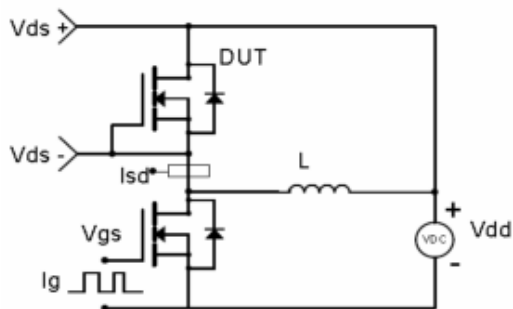
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

Fig.1 Power Dissipation Derating Curve

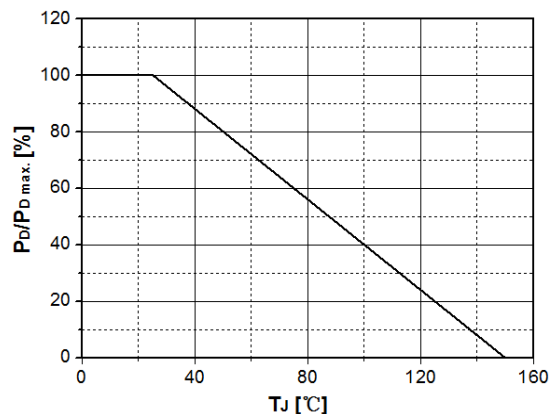


Fig.2 Avalanche Energy Derating Curve vs. Junction Temperature

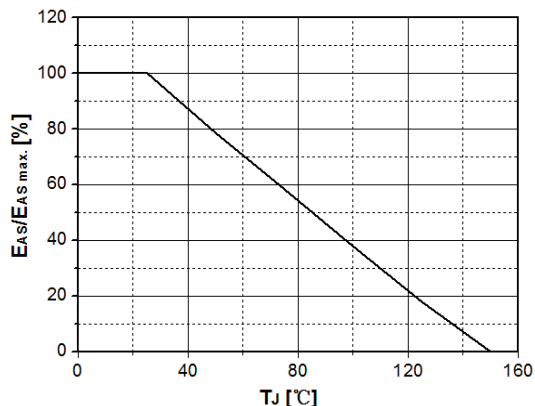


Fig.3 Typical Output Characteristics

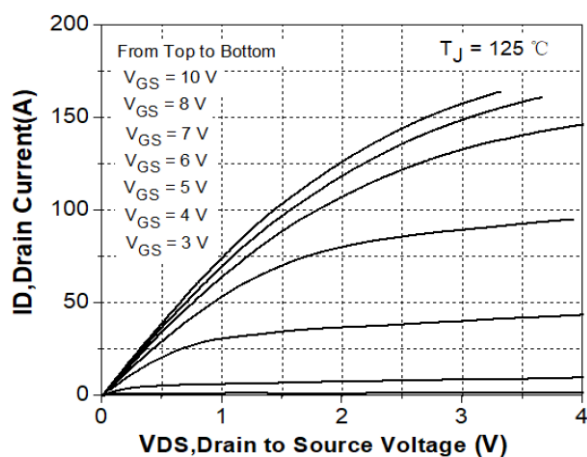


Fig. 4 Transconductance vs. Drain Current

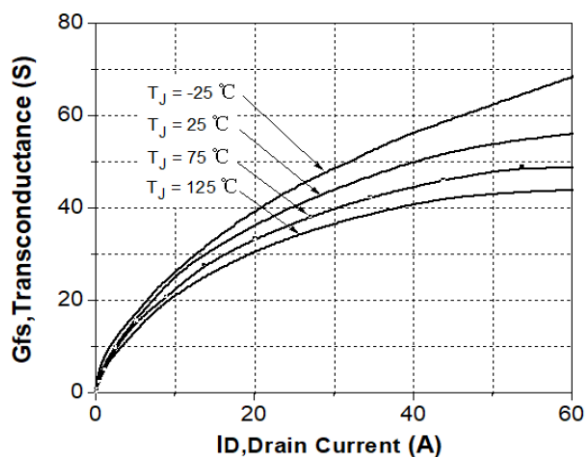


Fig.5 Typical Transfer Characteristics

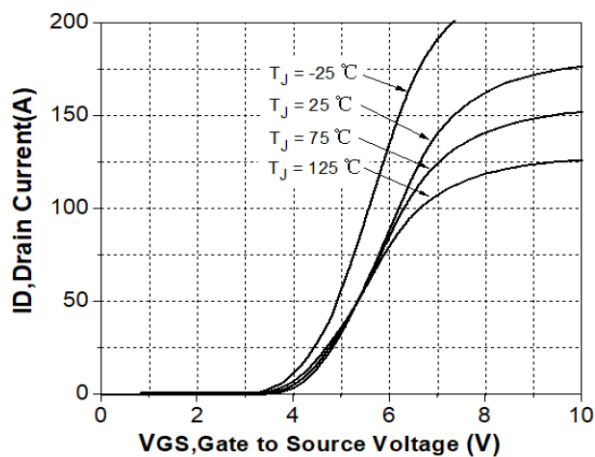


Fig. 6 State Resistance vs. Drain Current @-25°C

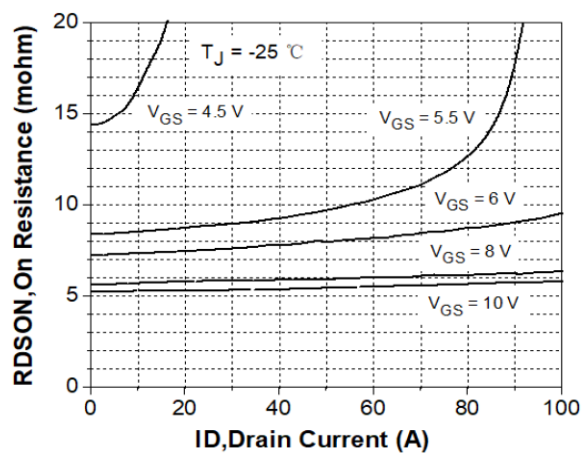


Fig.7 State Resistance vs. Drain Current @25°C

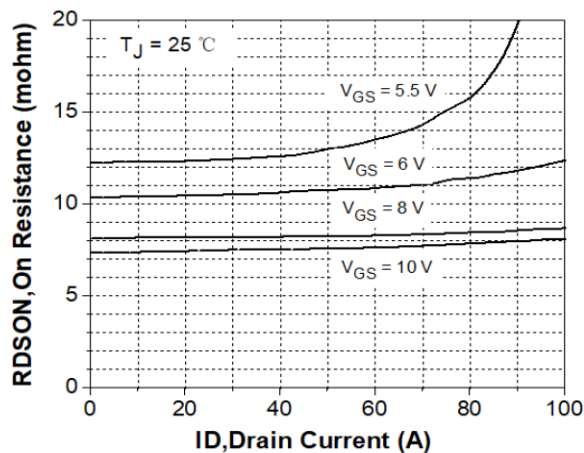


Fig. 8 State Resistance vs. Drain Current @125°C

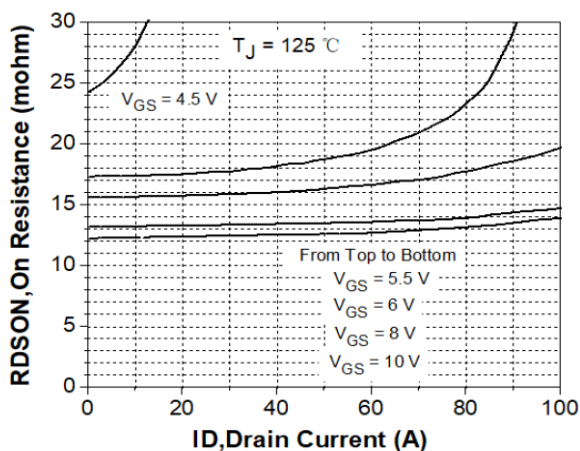


Fig.9 Typical Capacitance vs. Drain Source Voltage

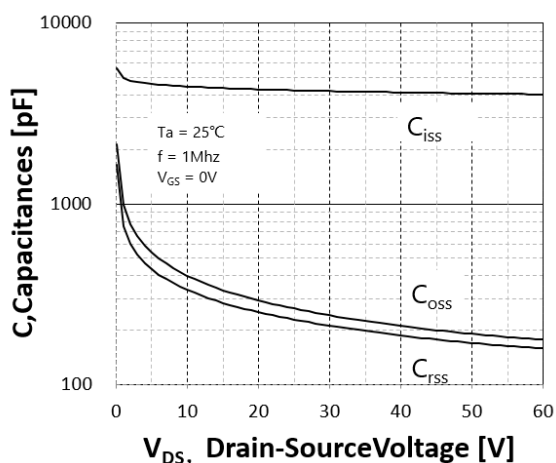


Fig.10 Dynamic Input Characteristics

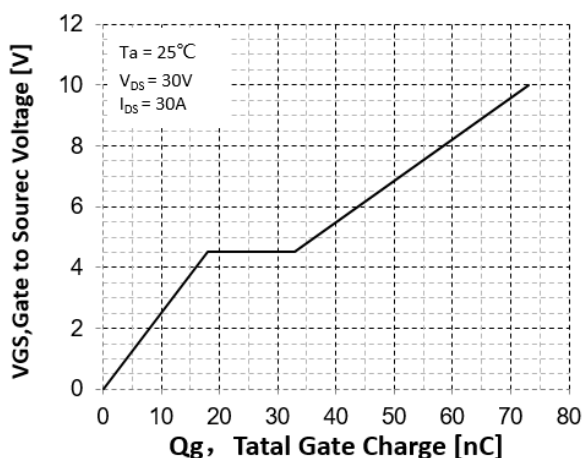


Fig.11 Breakdown Voltage vs. Junction Temperature

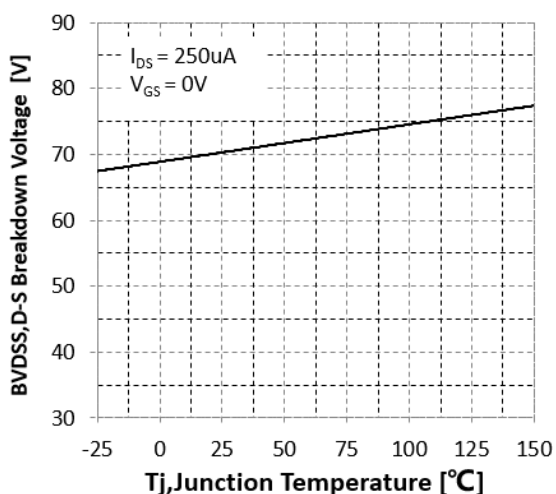


Fig. 12 Gate Threshold Voltage vs. Junction Temperature

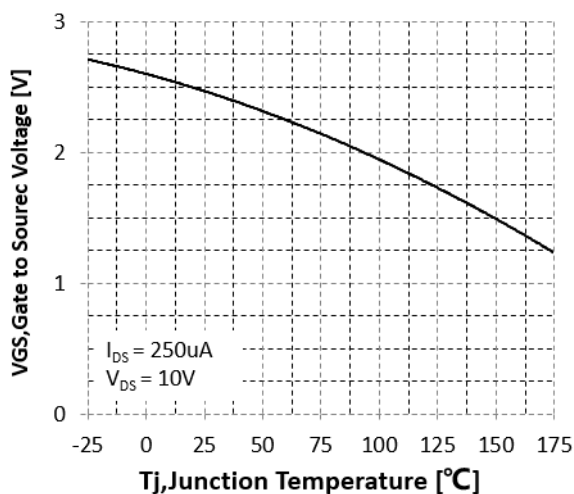


Fig.13 On-Resistance Variation vs. Junction Temperature

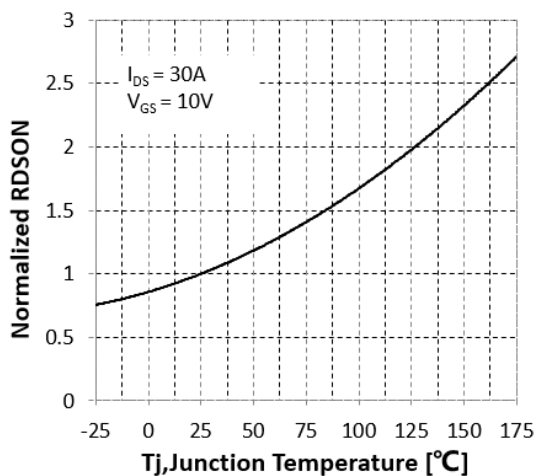


Fig.14 Maximum Drain Current vs. Case Temperature

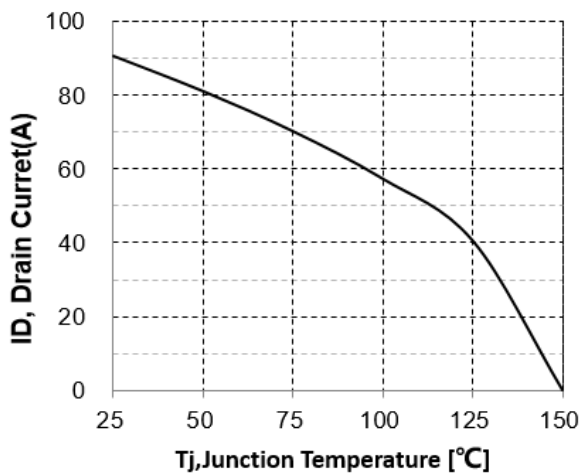


Fig.15 Body Diode Forward Voltage Vs Reverse Drain Current

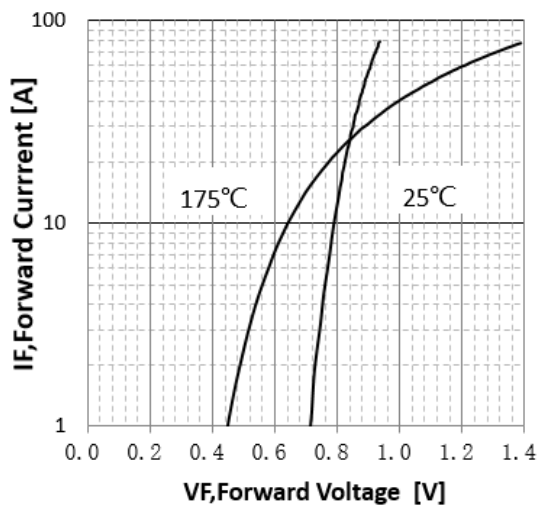


Fig.16 Safe Operating Area

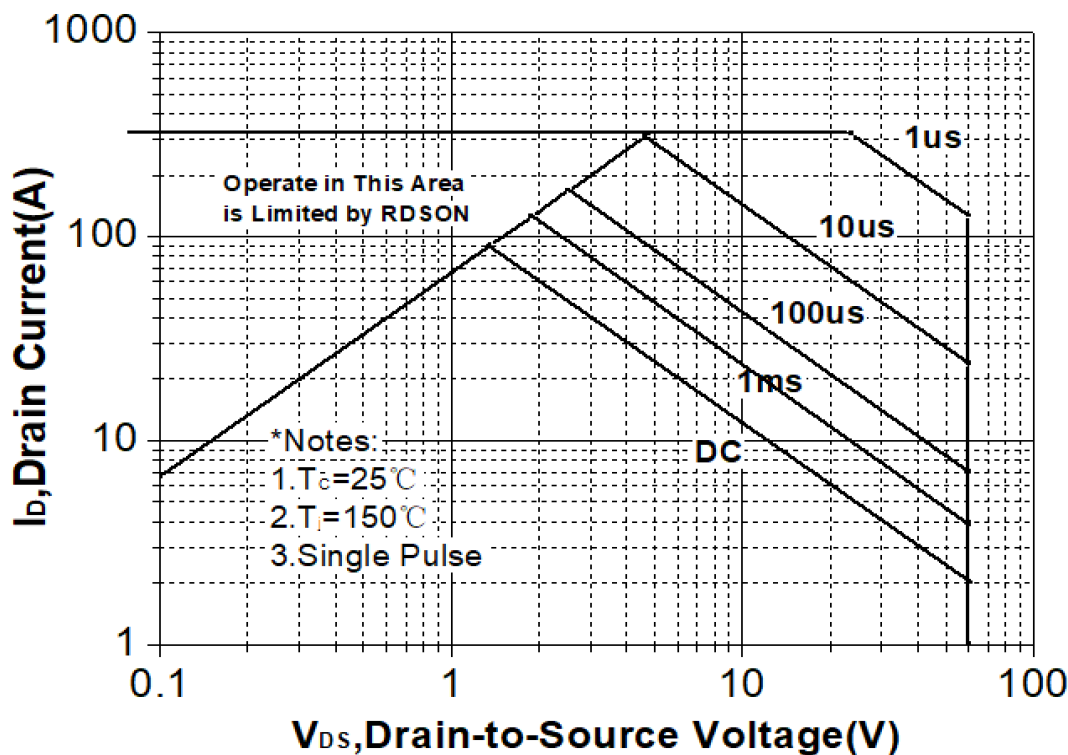
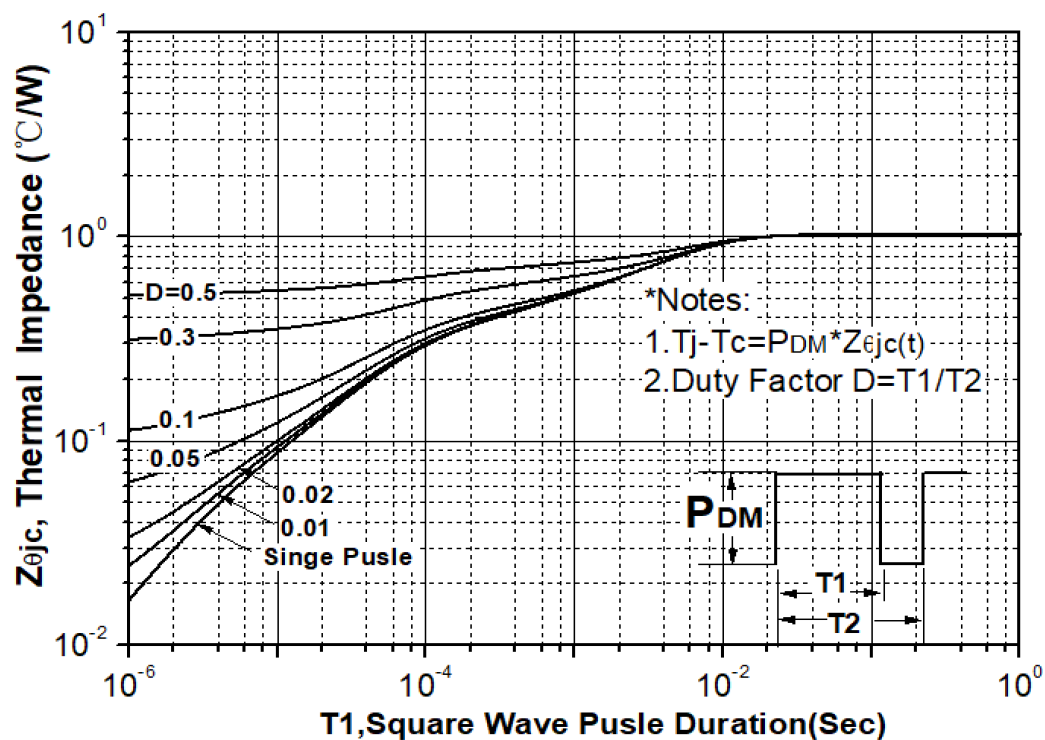
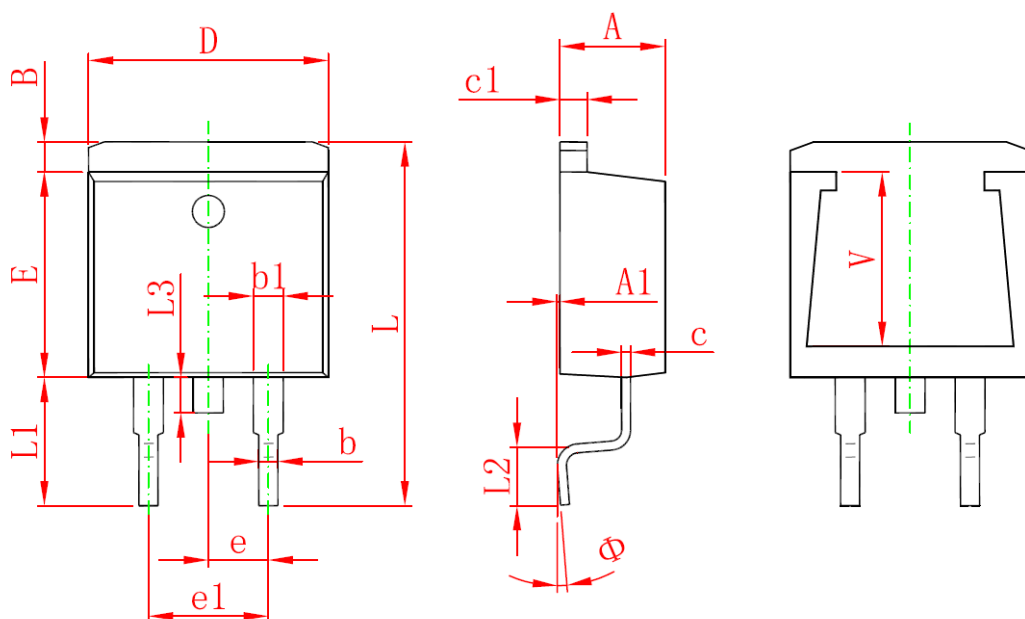


Fig. 17 Transient Thermal Response Curve



Package Dimensions : TO-263-2L(两脚镀镍)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	6.600 REF.		0.260 REF.	