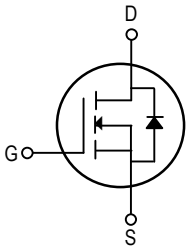
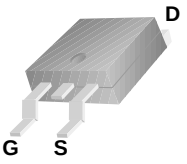
Features

- 80V/90A
  RDS(ON)=6.5mΩ (typ.)@ VGS=10V
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current
- 100% Avalanche Tested





TO-220F



TO-263

Application

- Power Supply
- DC-DC Converters
- UPS
- Battery Manageme

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Maximum	Unit
V_{DSS}	Drain-to-Source Voltag		80	V
V_{GSS}	Gate-to-Source		±25	V
I_D[3]	Continuous Drain Current	T_C=100°C	90	A
		T_C=100°C	63	
I_{DM}[4]	Pulsed Drain Current		360	A
EAS[5]	Avalanche energy		313	mJ
PD	Maximum Power Dissipation	T_C=25°C	180	W
T_J, T_{STG}	Junction & Storage Temperature Range		-55~175	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
Rθjc	Thermal Resistance-Junction to Case	0.63	℃/W
Rθja	Thermal Resistance-Junction to Ambient	62.5	

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

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	80	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,V_{GS}=0V	—	—	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	—	—	±100	nA
$R_{DS(on)}$[1]	Drain-Source On-Resistance	V_{GS}=10V, I_D=40A	—	6.5	8.5	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}[1]	Diode Forward Voltage	I_{SD}=50A,V_{GS}=0V	—	0.9	1.3	V
I_S[3]	Diode Continuous Forward Current		—	—	97	A
t_{rr}	Reverse Recovery Time	I_S=50A, dI/dt=100A/us	—	45	—	nS
Q_{rr}	Reverse Recovery Charge		—	65	—	nC
Dynamic Characteristics[2]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=50V Frequency=1MHz	—	3175	—	pF
C_{oss}	Output Capacitance		—	440	—	
C_{rss}	Reverse Transfer Capacitance		—	268	—	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=40V,I_D=50A, V_{GS}=10V,(Note1,4)	—	49	—	nS
t_r	Rise Time		—	64	—	
$t_{d(off)}$	Turn-Off Delay Time		—	139	—	
t_f	Fall Time		—	48	—	
Gate Charge Characteristics[2]						
Q_g	Total Gate Charge	V_{DS}=64V,I_D=50A, V_{GS}=10V,(Note1,4)	—	76	—	nC
Q_{gs}	Gate-to-Source Charge		—	21	—	
Q_{gd}	Gate-to-Drain Charge		—	24	—	

Note: 1: Pulse test; pulse width ≦ 300us, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.
3: Package limitation current is 100A.Calculated continuous current based on maximum allowable junction temperature.
4: Repetitive rating, pulse width limited by max junction temperature.
5: Starting TJ = 25°C,L = 1mH,IAS = 25A.

Typical Characteristics

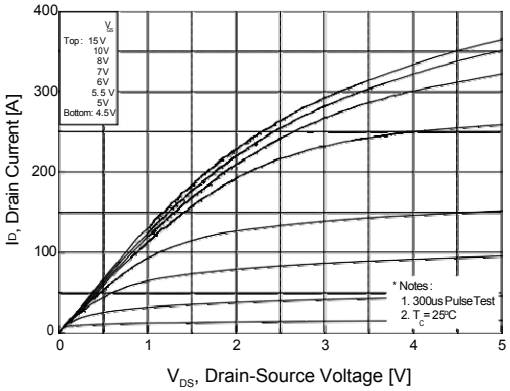


Figure 1. On Region Characteristics

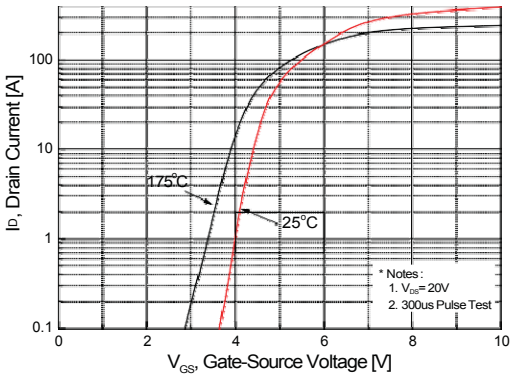


Figure 2. Transfer Characteristics

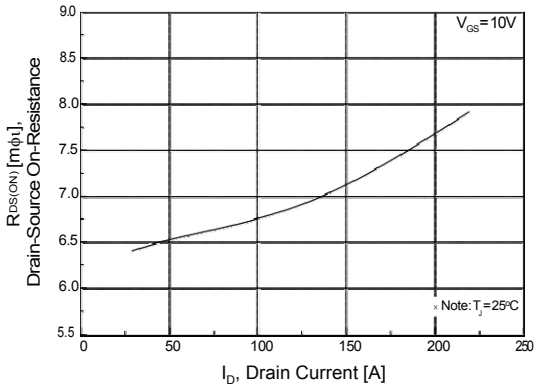


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

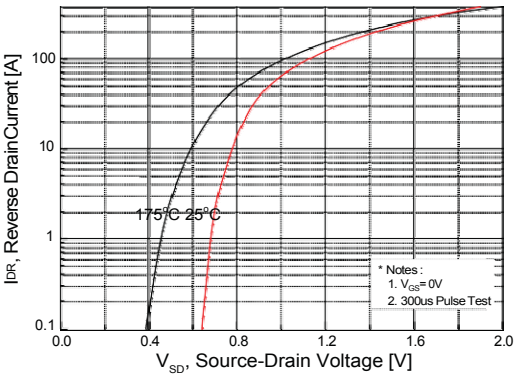


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

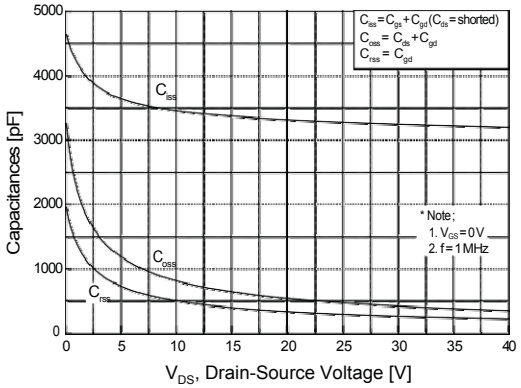


Figure 5. Capacitance Characteristics

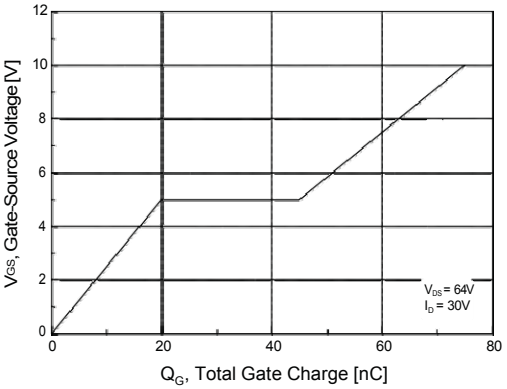


Figure 6. Gate Charge Characteristics

Typical Characteristics (continued)

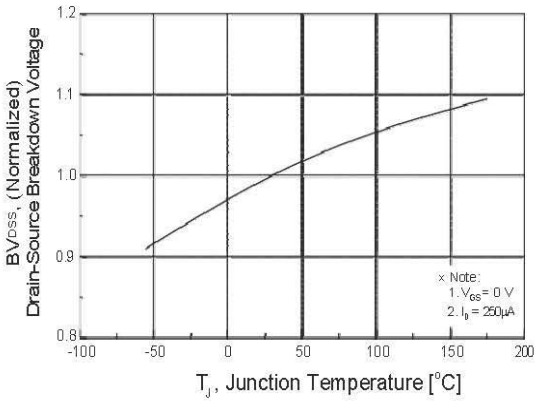


Figure 7. Breakdown Voltage Variation vs Temperature

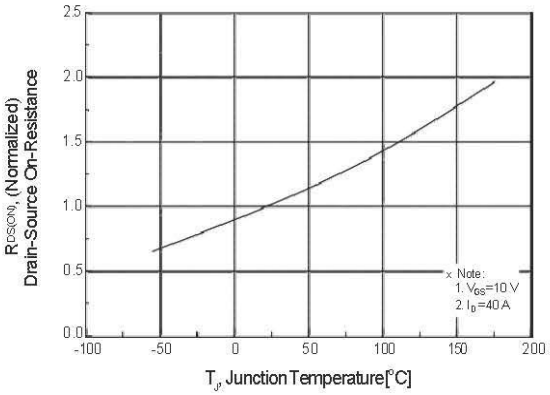


Figure 8. On-Resistance Variation vs Temperature

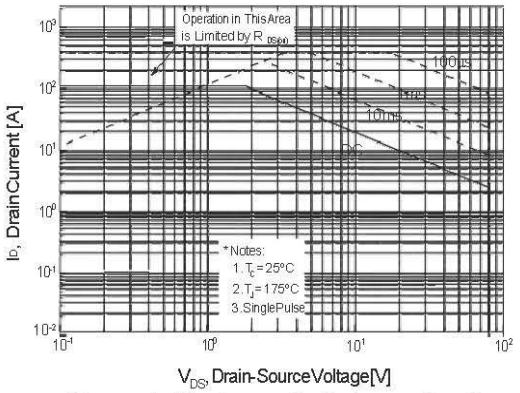


Figure 9. Maximum Safe Operating Area

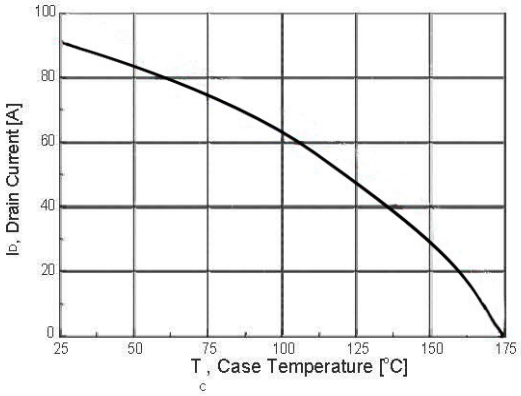


Figure 10. Maximum Drain Current vs Case Temperature

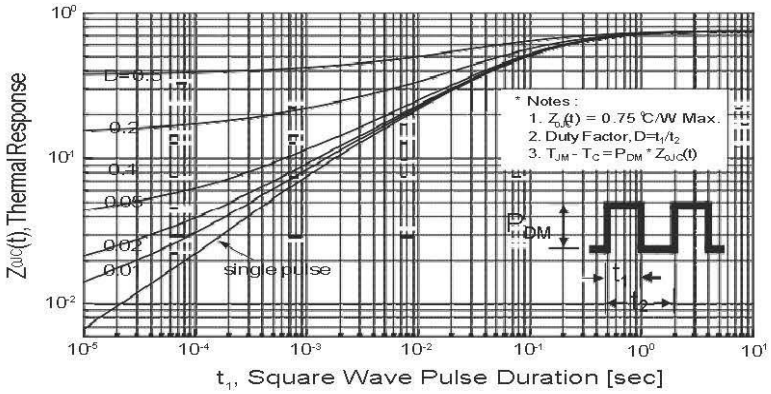
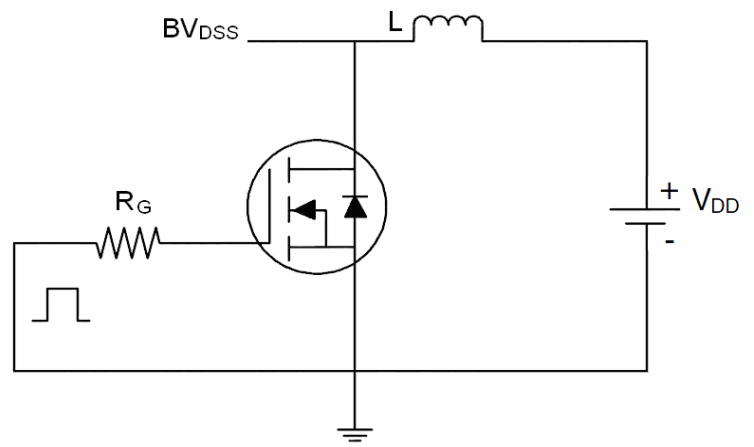


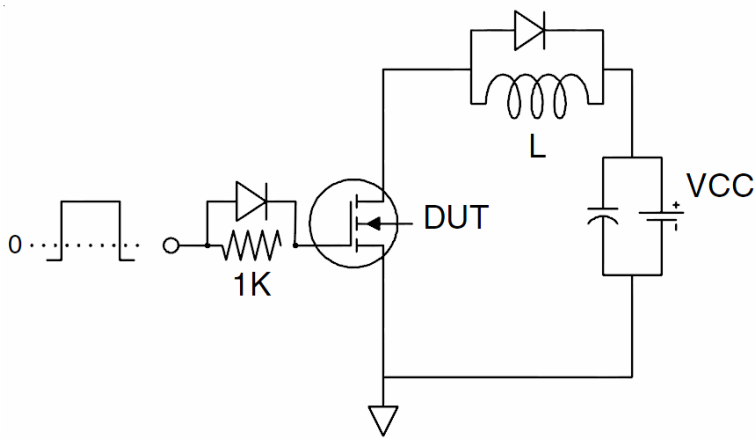
Figure 11. Transient Thermal Response Curve

Test Circuit

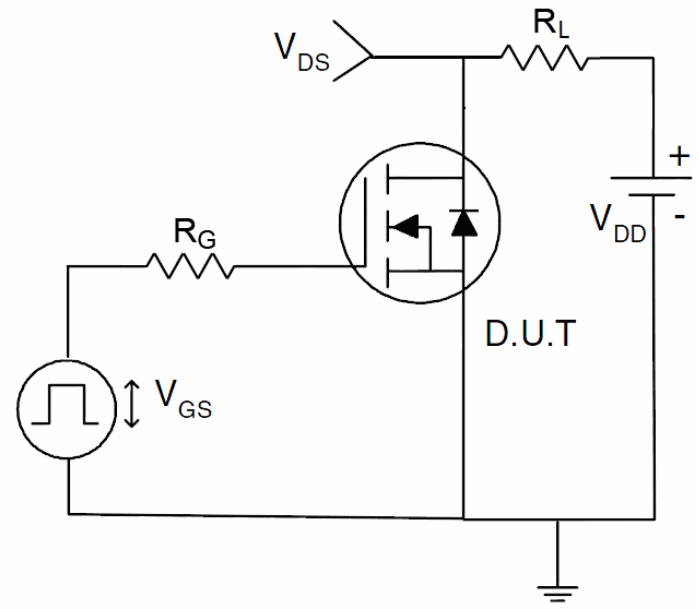
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



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