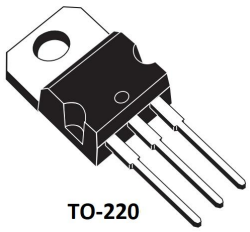
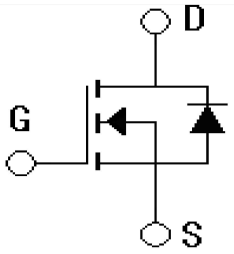
Features

- V_{DSS}=85V,I_D=210A
  R_{DS}(ON)<4.95mΩ @ V_{GS}=10V
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation
- Special process technology for high ESD capability



TO-220



Applications

- Automotive applications
- Hard switched and high frequency circuits
- UPS

Absolute Ratings (Tc=25℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	85	V
Drain Current -continuous	I_D，T=25℃	210(note 5)	A
	T=100℃	148	A
Drain Current - pulse	I_{DM}	850	A
Gate-Source Voltage	V_{GSS}	±20	V
Single Pulsed Avalanche Energy（note 3）	E_{AS}	1800	mJ
Power Dissipation	PD	300	W
	TC=25℃	2.0	W/℃
Operating and Storage Temperature Range	Tj,T_{STG}	-55~+175	℃
Peak Diode Recovery dv/dt (Note 4)	dv/dt	5	V/ns

*Drain current limited by maximum junction temperature

Electrical Characteristics(T_{CASE}=25℃ unless otherwise specified)

Parameter	Symbol	Tests conditions	Min	Type	Max	Units
Off-Characteristics						

Drain-Source Voltage	BV_{DSS}	I_D=250uA,V_{GS}=0V	85	-	-	V
Drain cut-off current	I_{DSS}	V_{DS}=85V,V_{GS}=0V Tj=25℃	-	-	1	μA
Gate-body leakage current,forward	I_{GSSF}	V_{DS}=0V,V_{GS}=20V	-	-	200	nA
Gate-body leakage current,reverse	I_{GSSR}	V_{DS}=0V,V_{GS}=-20V	-	-	-200	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.0	3.2	4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=40A	-	4.1	4.95	mΩ
Forward Transconductance	g_{fs}	V_{DS} =10V , I_D=20A	35	-	-	S
Dynamic Characteristics						
Input capacitance	Ciss	VDS=25V, VGS=0V, f=1.0MHZ	-	7600	-	pF
Output capacitance	Coss		-	720	-	pF
Reverse transfer capacitance	Crss		-	346	-	pF

Switching Characteristics						
Turn-On delay time	td(on)	VDD=40V,ID=40A, RG=1.2Ω，VGS=10V (note 2)	-	23	-	ns
Turn-On rise time	tr		-	124	-	ns
Turn-Off delay time	td(off)		-	84	-	ns
Turn-Off Fall time	tf		-	78	-	ns
Total Gate Charge	Qg	V_{DS}=40V,I_D=40A, V_{GS}=10V(note 2)	-	140	-	nC
Gate-Source charge	Qgs		-	40	-	nC
Gate-Drain charge	Qgd		-	57	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward Voltage	V_{SD}	VGS=0V,IS=40A	-	-	1.2	V
Reverse recovery time	trr	VGS=0V,IF=40A dIF/dt=500A/us(note 2)	-	110	-	ns
Reverse recovery charge	Qrr		-	300	-	uC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Thermal Characteristic

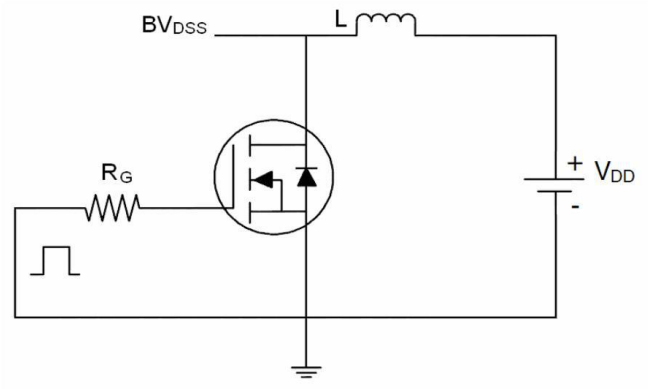
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.5	℃/W

Notes:

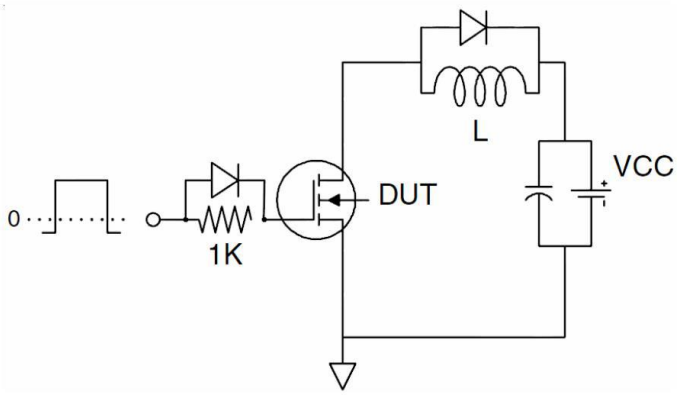
1. Surface Mounted on FR4 Board, t ≤ 10 sec.
2. Pulse Test: Pulse Width ≤ 400μs, Duty Cycle ≤ 2%.
3. EAS condition：Tj=25℃,VDD=42.5V,VG=10V,L=0.5mH,Rg=25Ω
4. ISD≤125A, di/dt≤260A/μs, VDD≤V(BR)DSS，TJ ≤175°C

Test Circuit

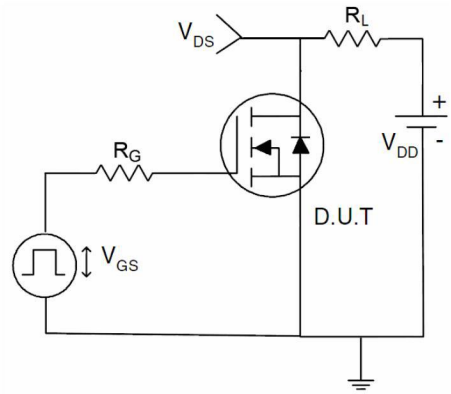
1) E_{AS} test Circuit



2) Gate charge test Circuit

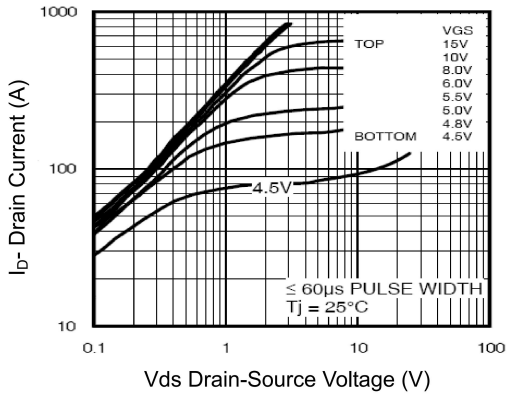


3) Switch Time Test Circuit

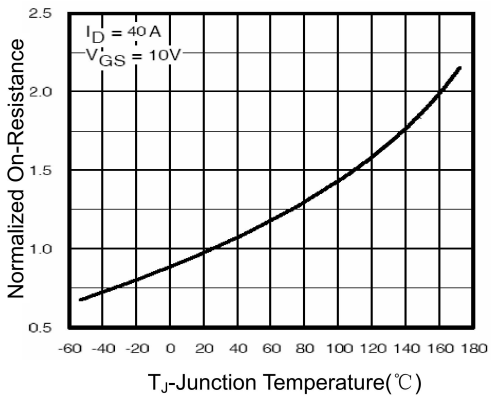


Typical Electrical and Thermal Characteristics (Curves)

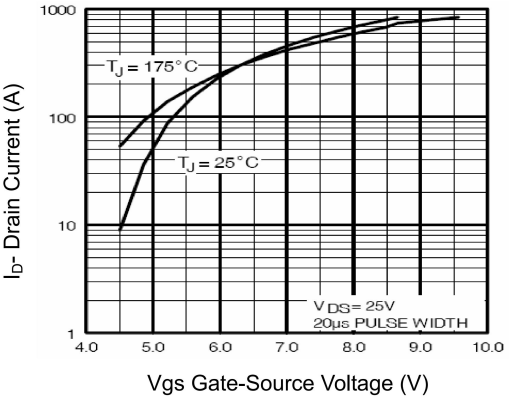
Output Characteristics



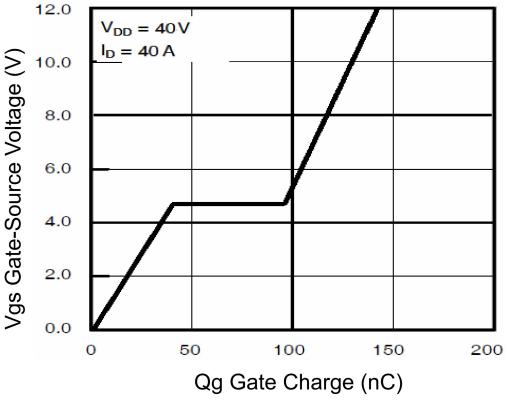
Rdson-JunctionTemperature



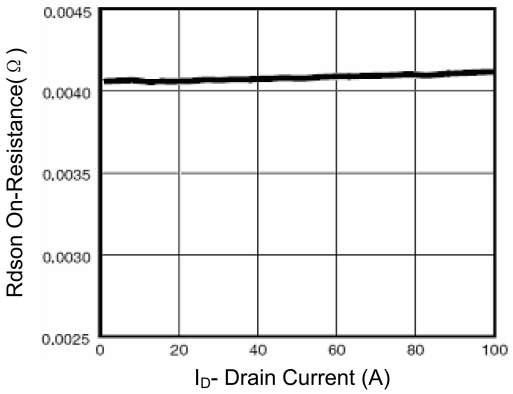
Transfer Characteristics



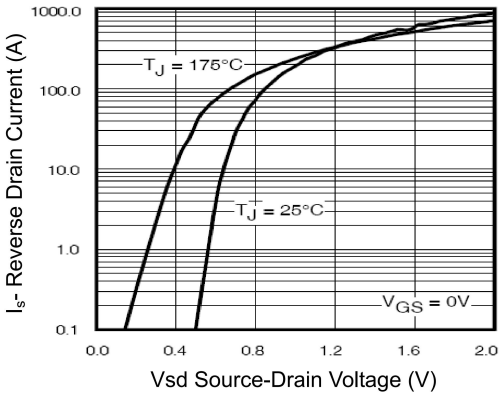
Gate Charge



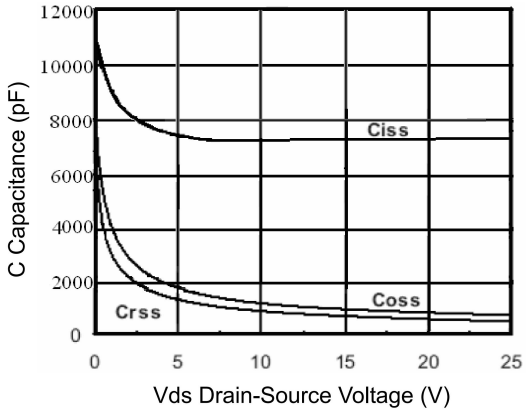
Rdson- Drain Current



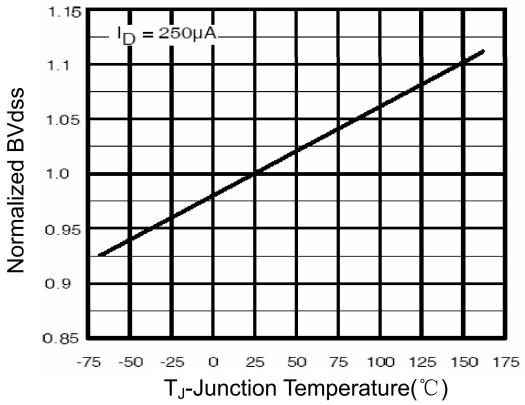
Source- Drain Diode Forward



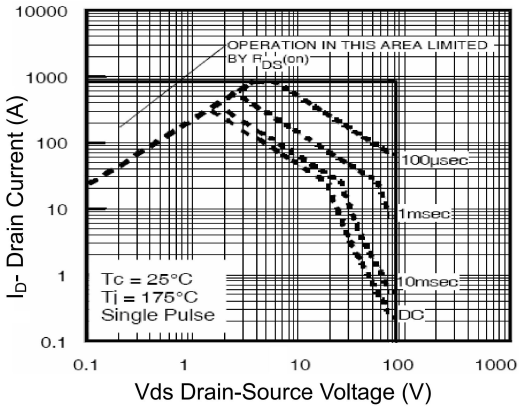
Capacitance vs Vds



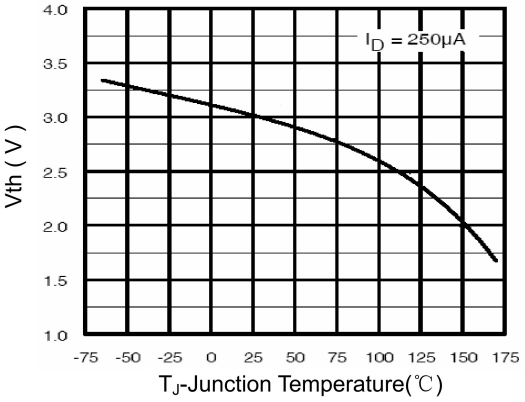
BV_{DSS} vs Junction Temperature



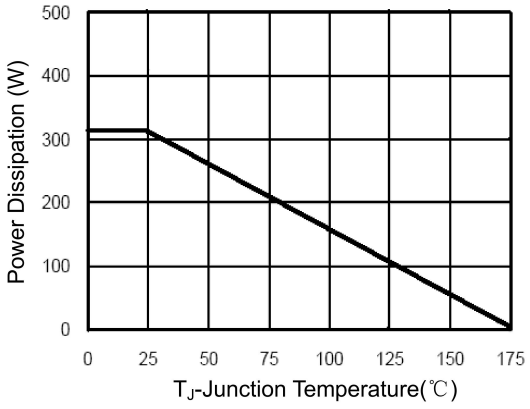
Safe Operation Area



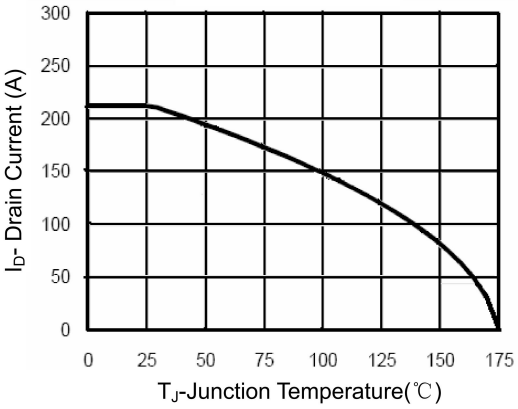
$V_{GS(th)}$ vs Junction Temperature

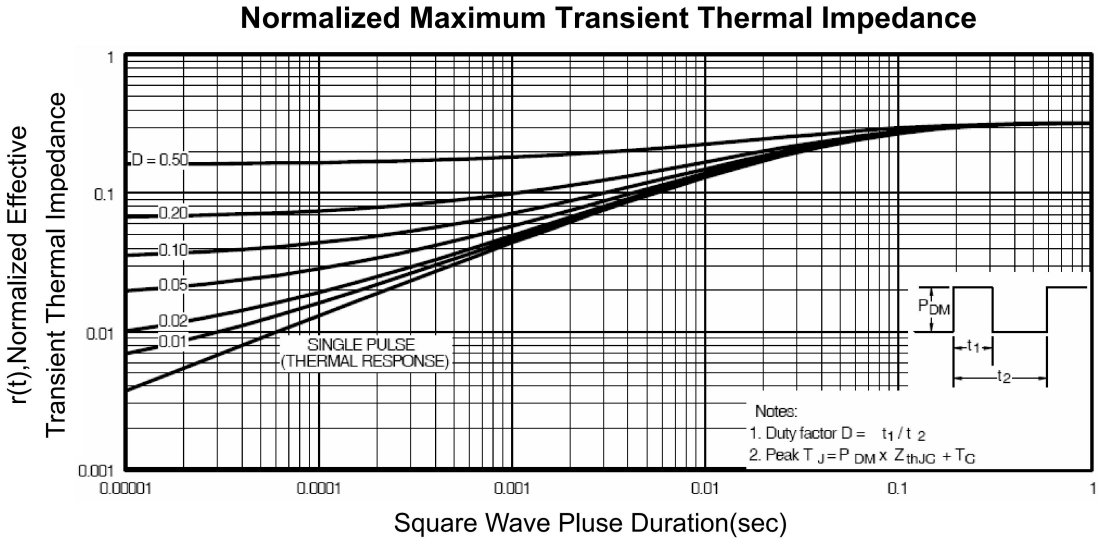


Power De-rating

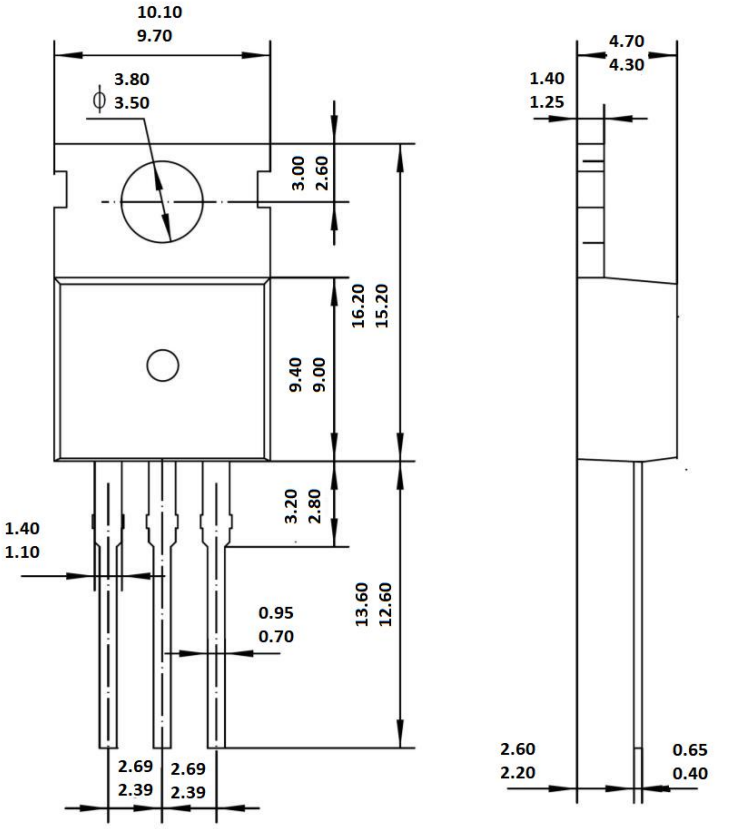


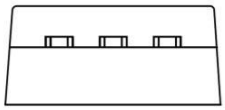
Current De-rating





Package Mechanical DATA





TO-220 Unit: mm