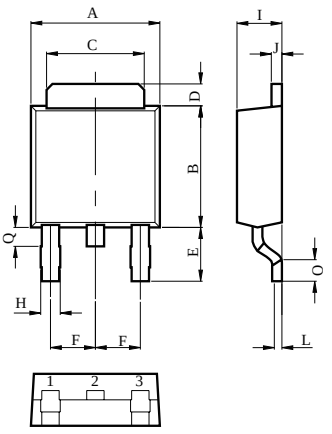
N-Channel Power MOSFET



DIM	MILLIMETERS
A	6 50 ± 0 2
B	5 60 ± 0 2
C	5 20 ± 0 2
D	1 50 ± 0 2
E	2 70 ± 0 2
F	2 30 ± 0 1
H	1 00 MAX
I	2 30 ± 0 2
J	0 5 ± 0 1
L	0 50 ± 0 10
O	1 6 ± 0 2
Q	0 95 MAX

1 GATE
2 DRAIN
3 SOURCE

D-PAK (TO-252)

GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently.

This new high energy device also offers a drain

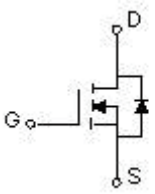
Desighed for high voltage, high speed power supplies , converters, power motor controls and bridge circuits power supplies

FEATURE

- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

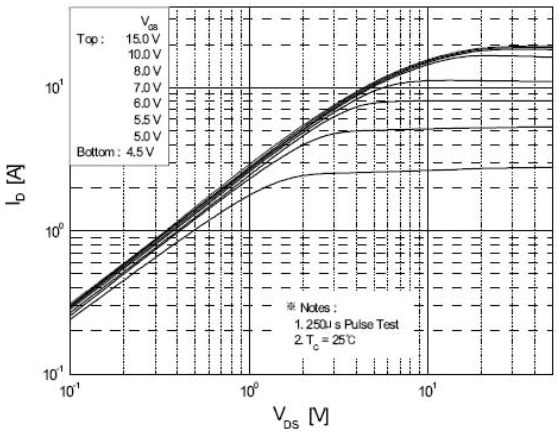
Symbol	Rating	Unit
V_{DSS}	200	V
I_D(Tc=25℃)	9	A
I_D(Tc=100℃)	5.7	A
I_{DM}	36	A
V_{GSS}	±30	V
I_{AR}	9	A
E_{AS}	160	mJ
E_{AR}	4.6	mJ
dv/dt	5.5	V/ns
P_D(T_A=25℃)	2.5	W
P_D(T_C=25℃)	46	W
R_{QJC}	2.7	℃/W
R_{QJA}	110	℃/W
T_J, T_{STG}	-55 to 150	℃

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

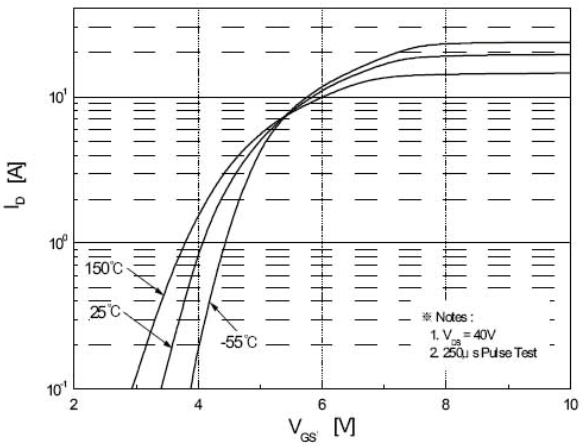
Symbol	Test Conditions	Min	Typ	Max	Unit
BV_{DSS}	V_{GS}=0V I_D=250μA	200			V
$\triangle BV_{DSS}/\triangle T_J$	I_D=250μA		0.2		V/℃
I_{DSS}	V_{DS}=200V V_{GS}=0V			1	μA
	V_{DS}=160V T_C=125℃			10	μA
I_{GSS}	V_{GS}=±25V V_{DS}=0V			±0.1	μA
$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	2		4	V
$R_{DS(on)}$	V_{GS}=10V I_D=4.5A		0.34	0.4	Ω
g_{FS}	V_{DS}=40V I_D=4.5A		4.2		S
C_{iss}	V_{DS}=25V V_{GS}=0V f=1MHz		420	550	pF
C_{oss}			85	110	
C_{rss}			35	45	
$t_{d(on)}$	V_{DD}=100V I_D=9A R_G=25Ω		8	30	ns
t_r			75	160	
$t_{d(off)}$			47	110	
t_f			64	140	
Q_g	V_{DS}=160V I_D=9A V_{GS}=10V		19	25	nC
Q_{gs}			3		nC
Q_{gd}			9.5		nC
I_S				7	A
I_{SM}				28	A
V_{SD}	V_{GS}=0V I_S=9A			1.5	V
t_{rr}	V_{GS}=0V I_S=9A		150		ns
Q_{rr}	dI_F/dt=100A/μs		0.68		μC

Typical Electrical and Thermal Characteristics (Curves)

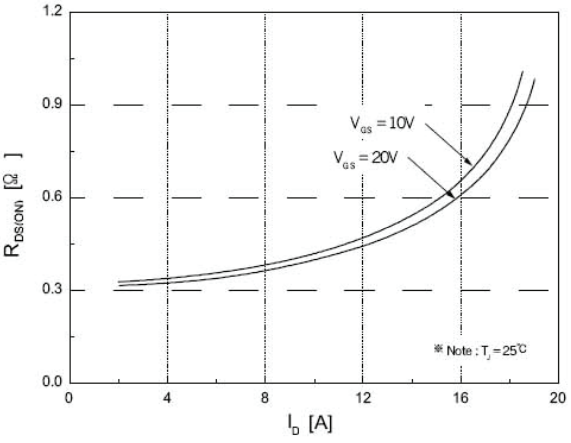
$I_D - V_{DS}$



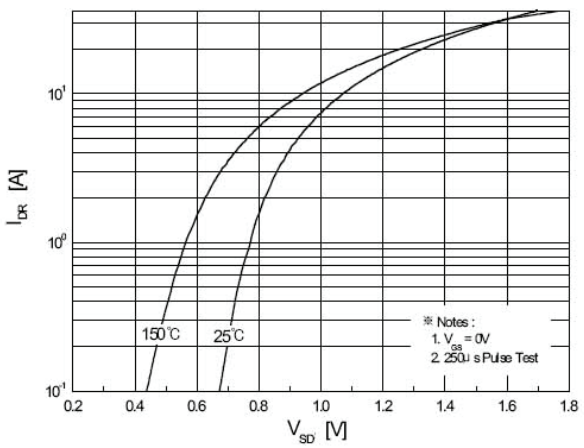
$I_D - V_{GS}$



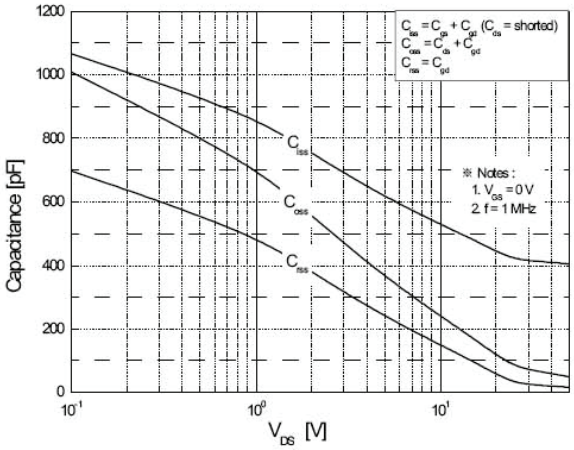
$R_{DS(ON)} - I_D$



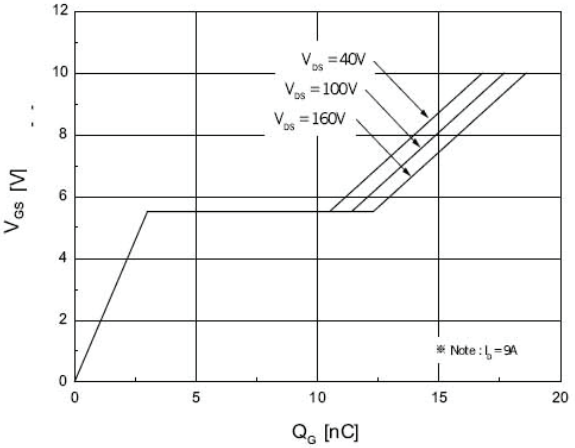
$I_{DR} - V_{SD}$

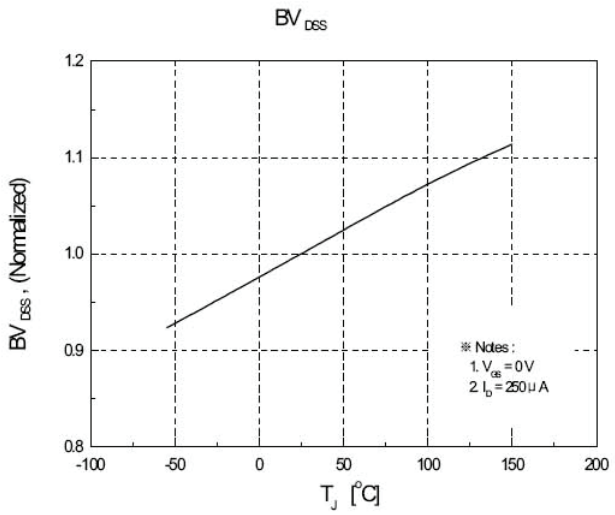


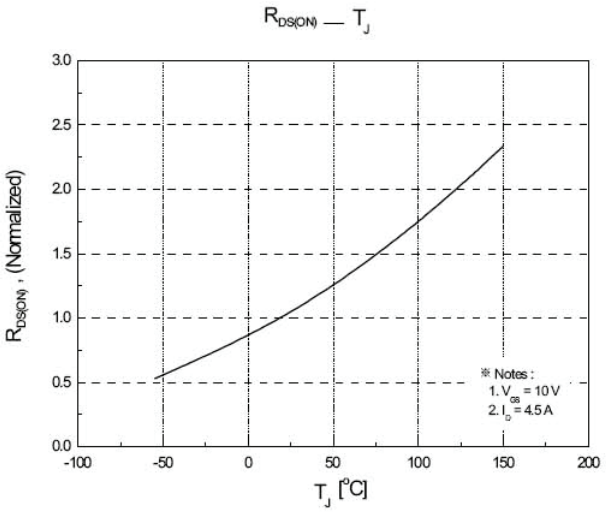
Capacitance $- V_{DS}$

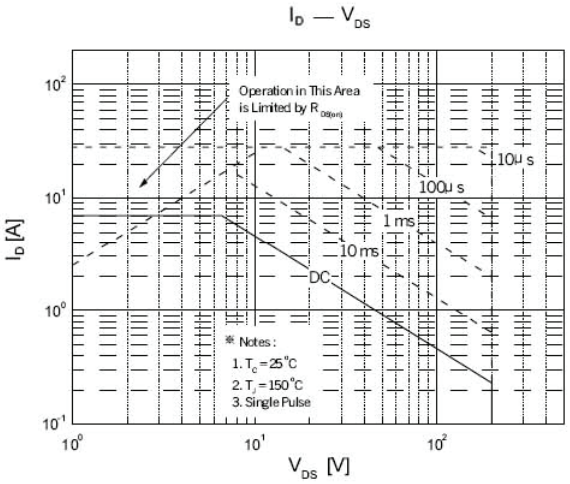


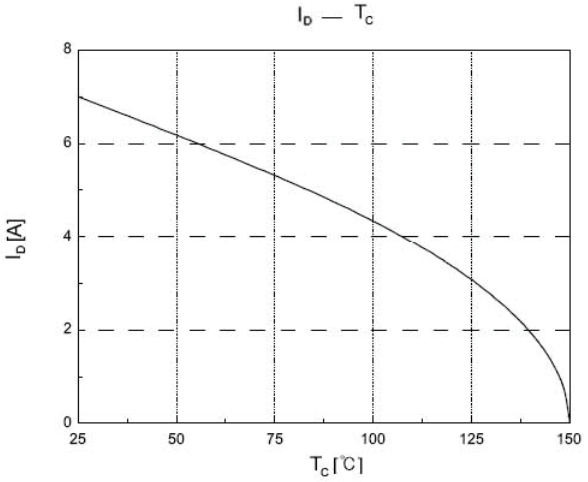
$V_{GS} - Q_G$

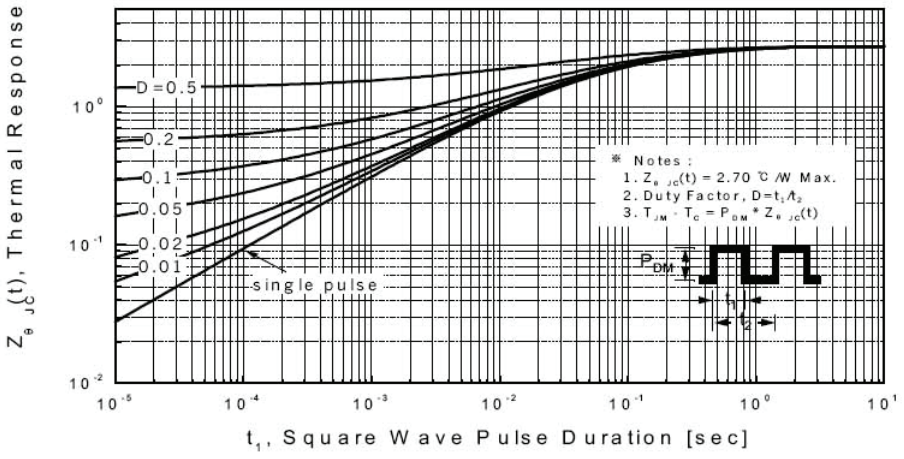



BV DSS
BV DSS , (Normalized)
T J [°C]
※ Notes :
1. V GS = 0V
2. I D = 250μA


R DS(ON) — T J
R DS(ON) , (Normalized)
T J [°C]
※ Notes :
1. V GS = 10V
2. I D = 4.5A


I D — V DS
I D [A]
V DS [V]
Operation in This Area is Limited by R DS(on)
10μs
100μs
1ms
10ms
DC
※ Notes :
1. T C = 25°C
2. T J = 150°C
3. Single Pulse


I D — T C
I D [A]
T C [°C]


Z θ JC (t), Thermal Response
t 1 , Square Wave Pulse Duration [sec]
D = 0.5
0.2
0.1
0.05
0.02
0.01
single pulse
※ Notes :
1. Z θ JC (t) = 2.70 °C /W Max.
2. Duty Factor, D=t 1 /t 2
3. T JM - T C = P DM * Z θ JC (t)
P DM
t 1
t 2