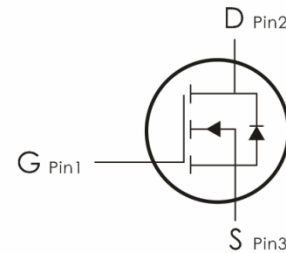


Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=150V, I_D=40A, R_{DS(ON)}<45m\Omega @V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	40	A
	Continuous Drain Current- $T_C=100^\circ C$	29	
E_{AS}	Single Pulse Avalanche Energy(note1)	310	mJ
P_D	Power Dissipation	140	W
I_{AR}	Avalanche Current (note2)	40	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+175	$^\circ C$
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.07	$^\circ C/W$

Electrical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	150	170	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=150V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics (Note 3)						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu A$	2.5	3.2	4.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=18A$	---	35	45	m Ω
G_{FS}	Forward Transconductance	$V_{DS}=15V, I_D=18A$	38	---	---	S
Dynamic Characteristics (Note 4)						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	---	3850	---	pF
C_{oss}	Output Capacitance		---	185	---	
C_{rss}	Reverse Transfer Capacitance		---	86	---	
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V, I_D=2A, R_L=15\ \Omega$ $V_{GS}=10V, R_G=2.5\ \Omega$	---	17.8	---	ns
t_r	Rise Time		---	11.8	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	56	---	ns
t_f	Fall Time		---	14.6	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V$ $I_D=30A$	---	105	---	nC
Q_{gs}	Gate-Source Charge		---	21	---	nC
Q_{gd}	Gate-Drain Charge		---	31.5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage (Note 3)	$V_{GS}=0V, I_S=18A$	---	0.82	1.2	V
I_S	Diode Forward Current (Note 2)	---	---	---	40	A

Trr	Reverse Recovery Time	T _J = 25°C, I _F = 18A diF/dt=100A/μs ^(Note3)	---	70	---	NS
Qrr	Reverse Recovery Charge		---	230	---	NC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production
5. EAS condition: T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25Ω

Typical Characteristics: (T_C=25°C unless otherwise noted)

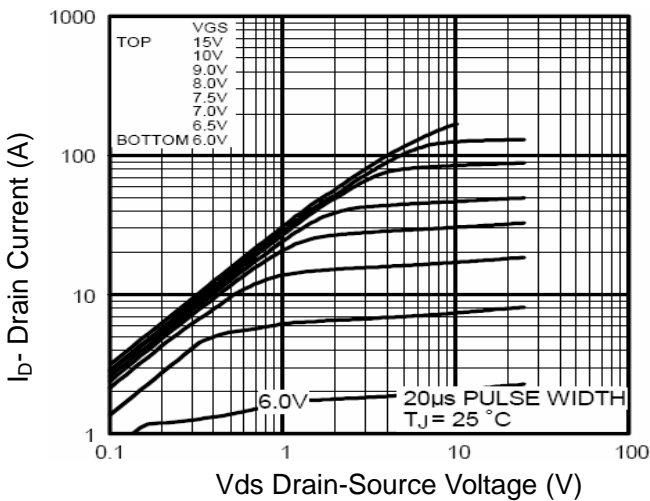


Figure 1 Output Characteristics

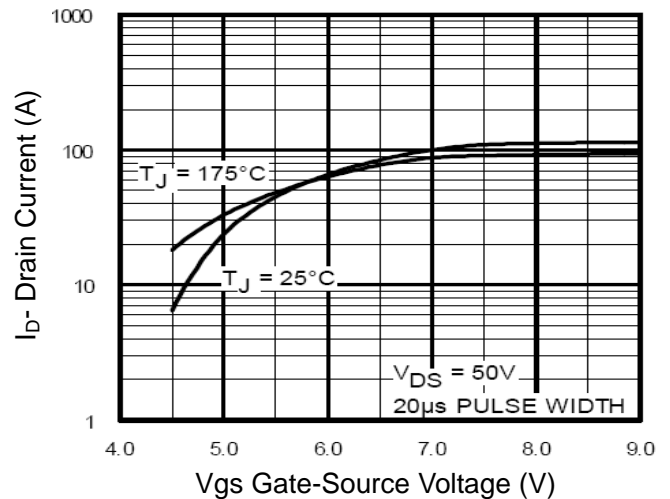


Figure 2 Transfer Characteristics

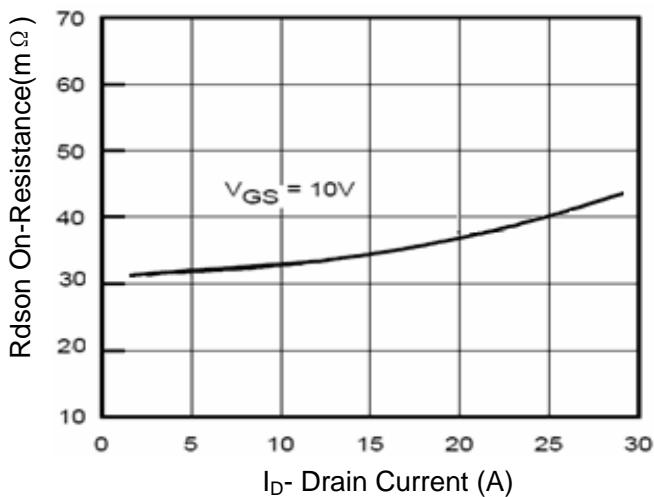


Figure 3 Rdson- Drain Current

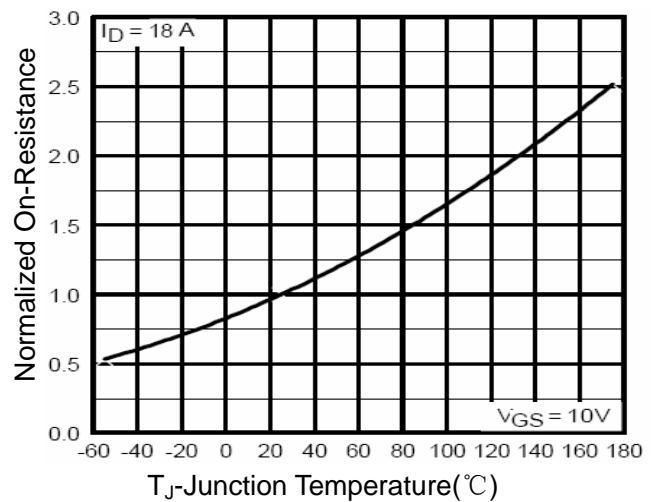


Figure 4 Rdson-Junction Temperature

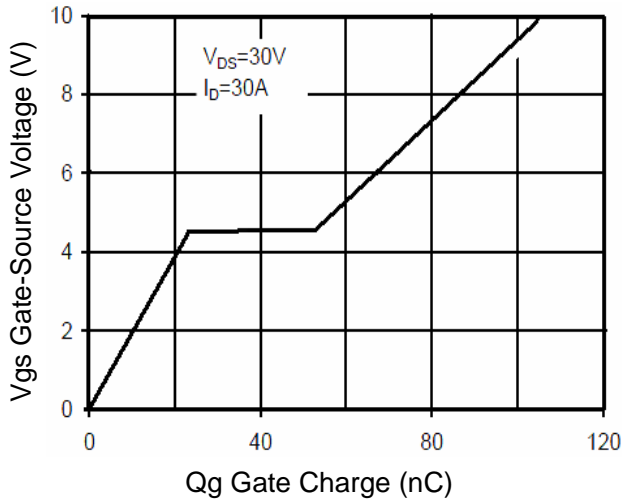


Figure 5 Gate Charge

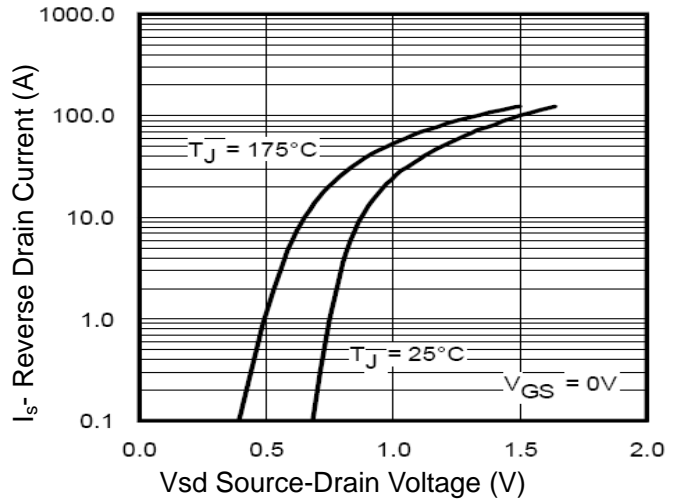


Figure 6 Source- Drain Diode Forward

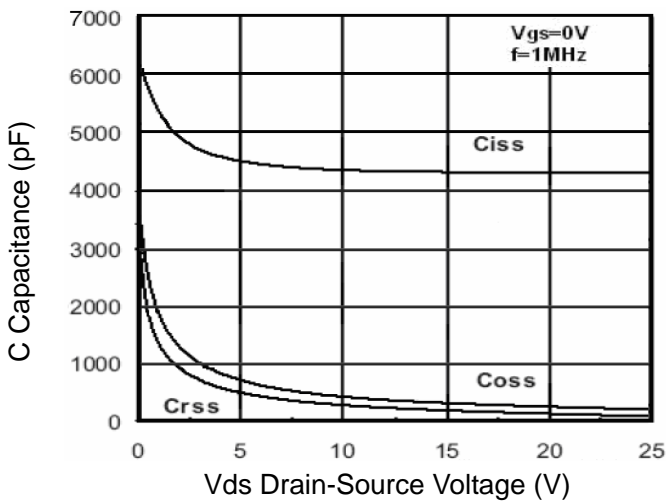


Figure 7 Capacitance vs Vds

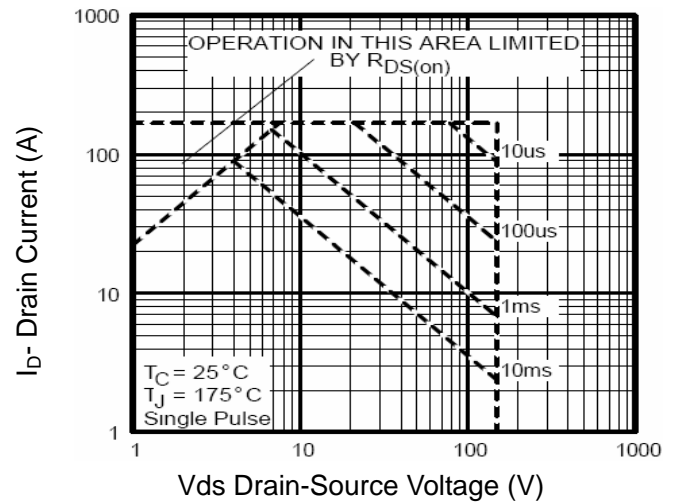


Figure 8 Safe Operation Area

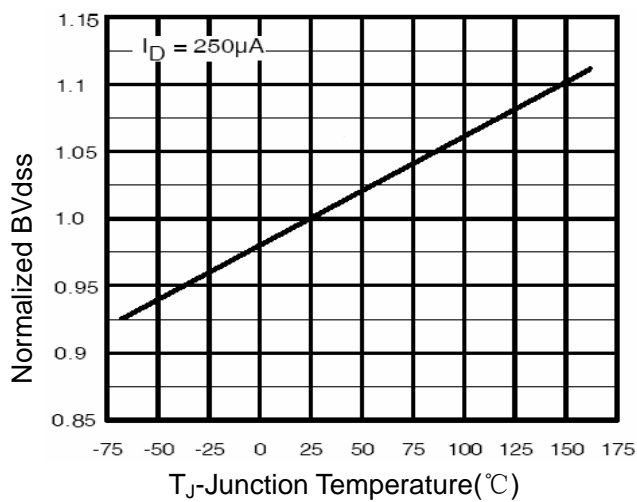


Figure 9 BV_{DSS} vs Junction Temperature

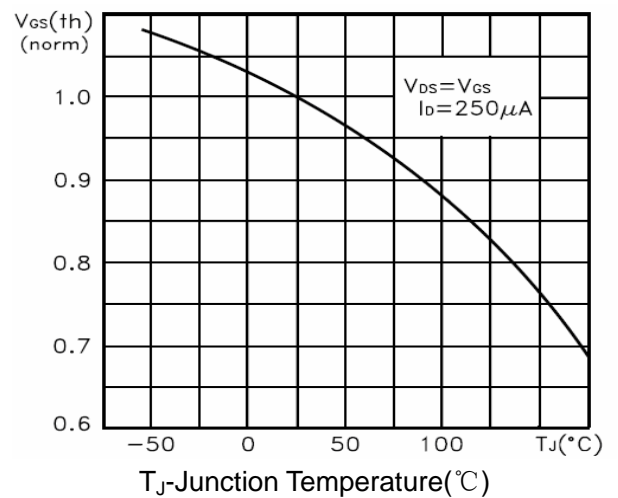


Figure 10 V_{GS(th)} vs Junction Temperature

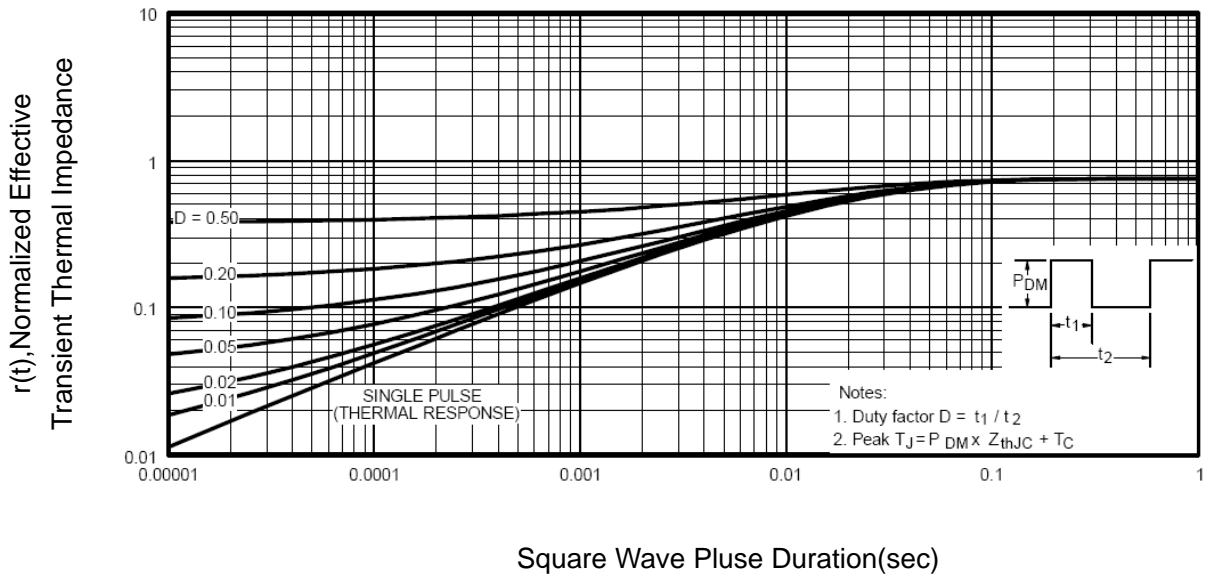


Figure 11 Normalized Maximum Transient Thermal Impedance



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