

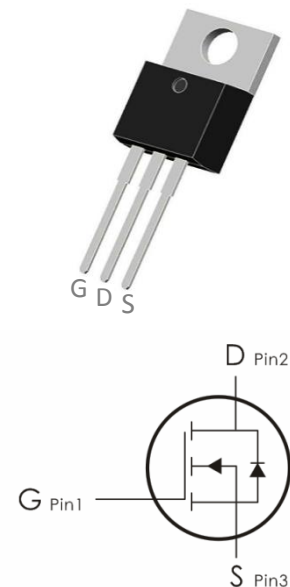
Description:

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-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	150	170	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =150V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics ^(Note 3)						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ 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 Ω V _{GS} =10V ,R _G =2.5 Ω .	---	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)

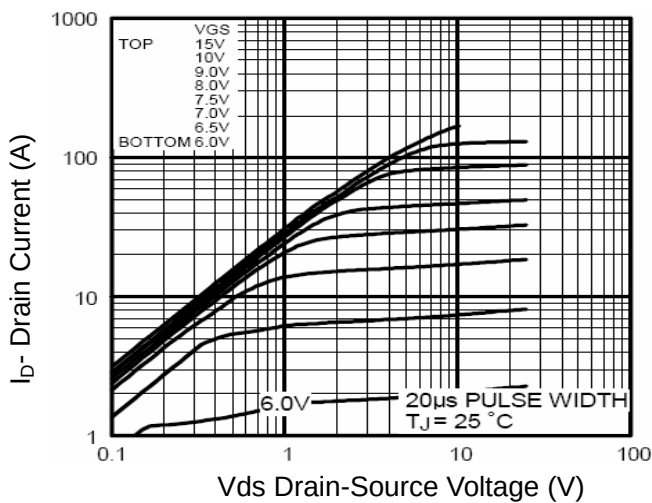


Figure 1 Output Characteristics

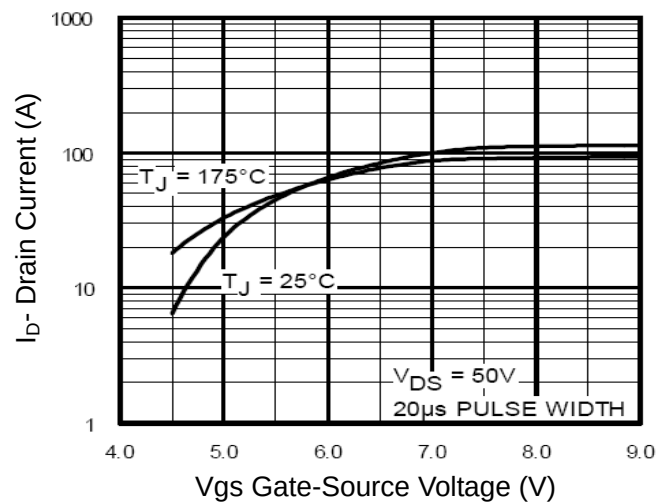


Figure 2 Transfer Characteristics

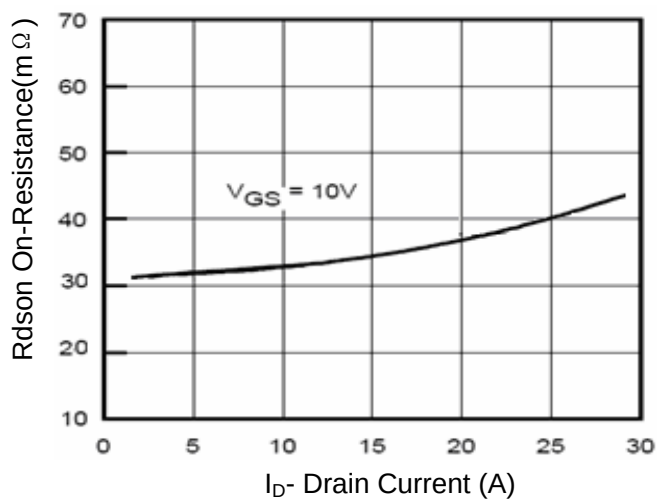


Figure 3 Rdson- Drain Current

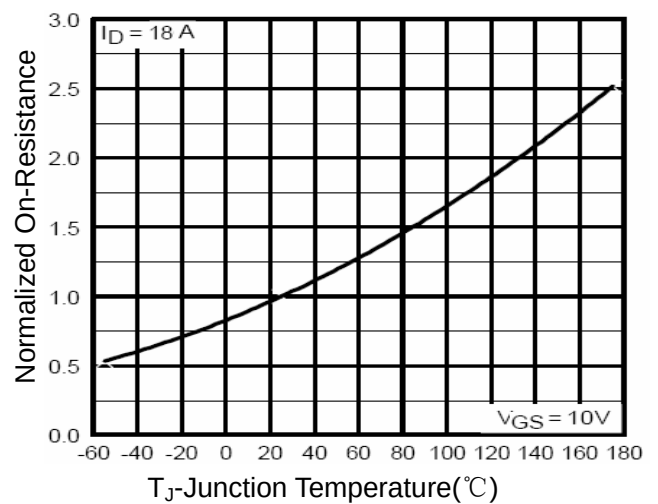
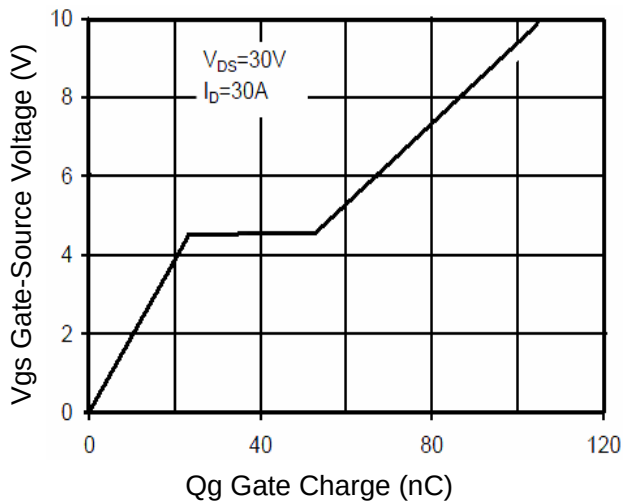
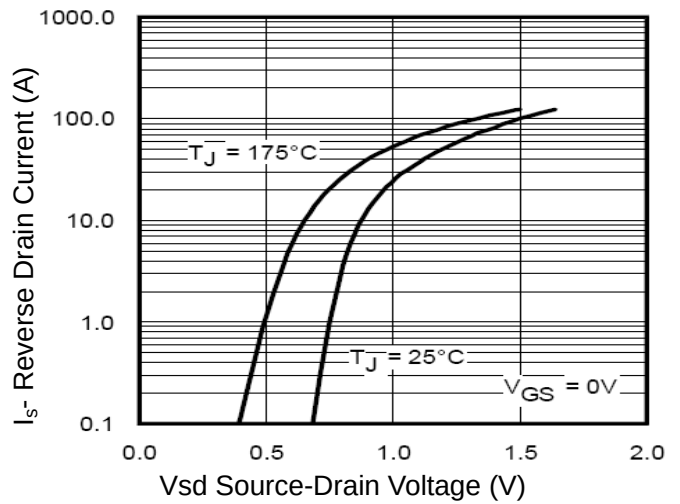
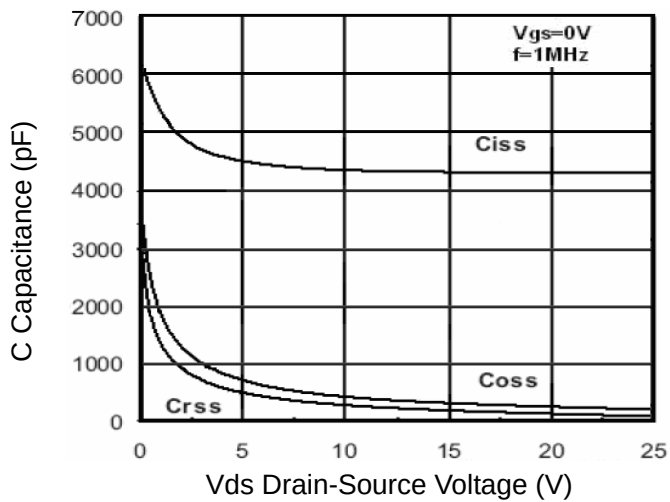
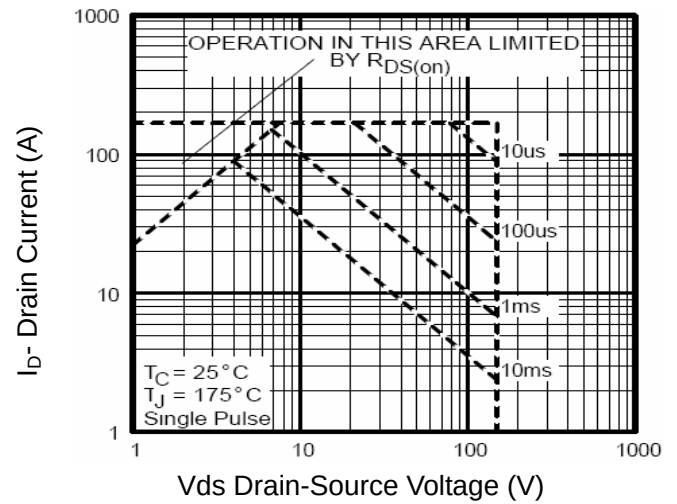
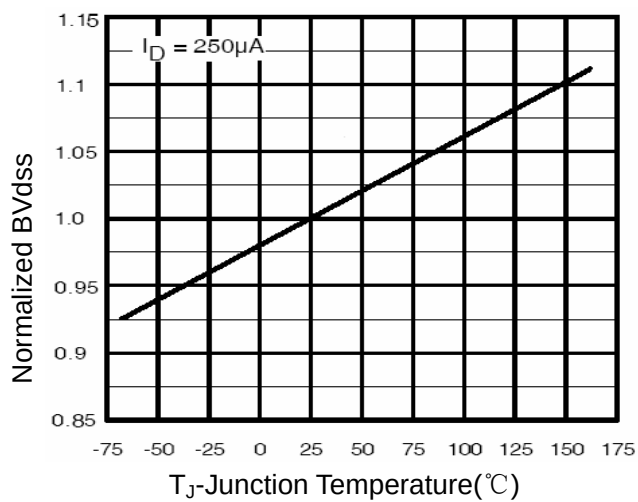
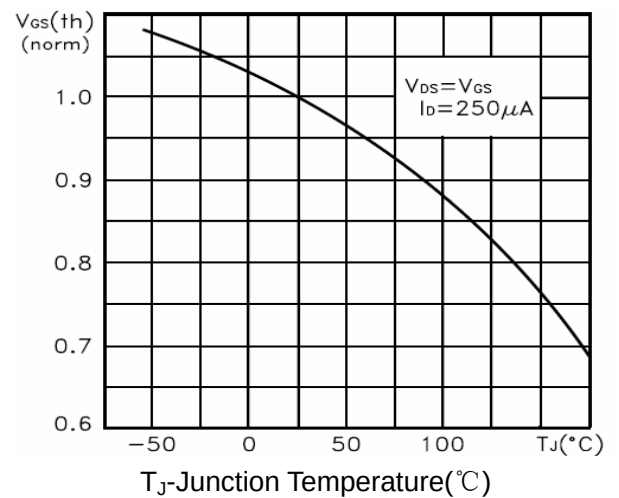


Figure 4 Rdson-Junction Temperature


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

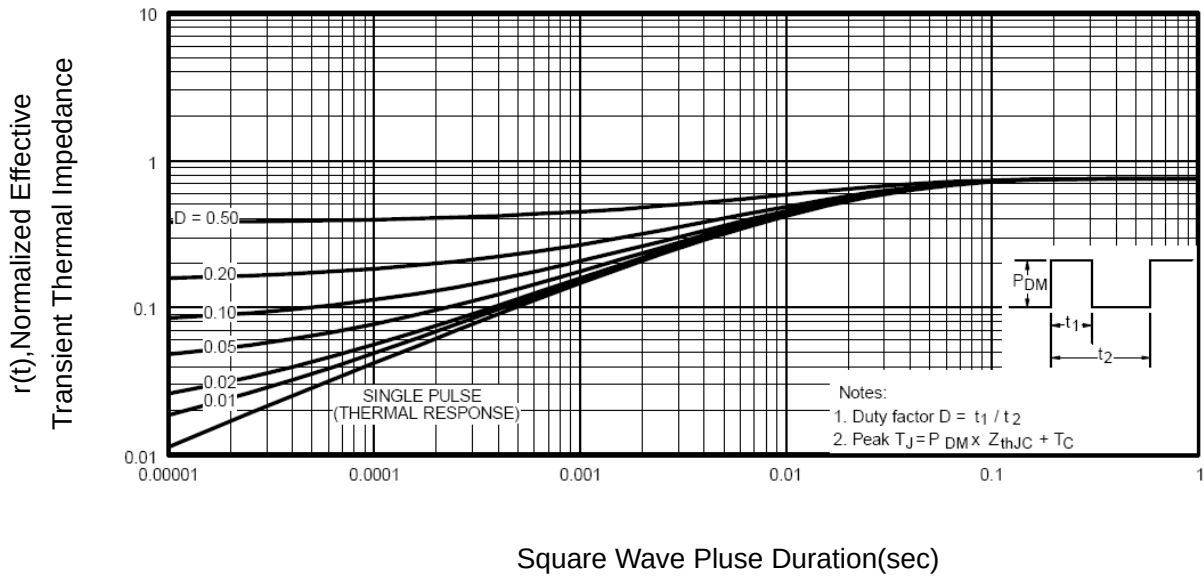


Figure 11 Normalized Maximum Transient Thermal Impedance



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