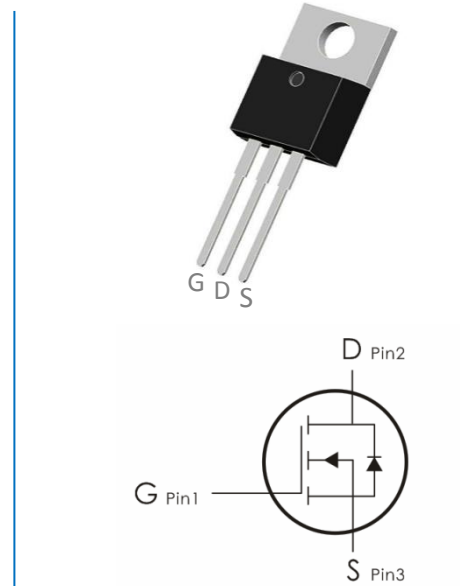


Description:

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) $V_{DS}=30V, I_D=180A, R_{DS(ON)} \leq 3m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹	180	A
	Continuous Drain Current-TC=100°C	127	
	Pulsed Drain Current ¹	720	
E_{AS}	Single Pulse Avalanche Energy ³	439	mJ
P_D	Power Dissipation ⁴	115	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	°C

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	1.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	62.5	

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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=30V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.3	1.8	2.4	V
$R_{DS(on)}$	Drain-Source On Resistance ²	$V_{GS}=10V, I_D=40A$	---	2.1	3	m Ω
		$V_{GS}=4.5V, I_D=20A$	---	2.8	4	
G_{FS}	Forward Transconductance	$V_{DS}=0V, I_D=0A$	---	---	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	3500	4565	5500	pF
C_{oss}	Output Capacitance		570	785	1000	
C_{rss}	Reverse Transfer Capacitance		500	710	900	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V, I_D=40A,$ $R_{GEN}=3\ \Omega, V_{GS}=10V$	---	12	---	ns
t_r	Rise Time		---	8.5	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	77.5	---	ns
t_f	Fall Time		---	19.5	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=15V,$ $I_D=40A$	---	73	---	nC
Q_{gs}	Gate-Source Charge		---	12	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	18	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=40A$	---	0.8	-1.2	V

Ls	Diode Forward Current (Note 2)	---	---	---	---	A
Trr	Reverse Recovery Time	T _j =25°C, I _{sd} =40A, V _{GS} =0V di/dt=500A/μs	---	31	---	NS
Qrr	Reverse Recovery Charge		---	15.5	---	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.

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

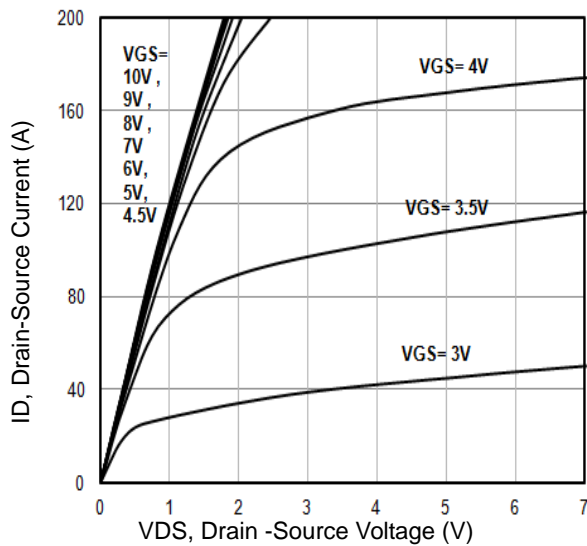


Fig1. Typical Output Characteristics

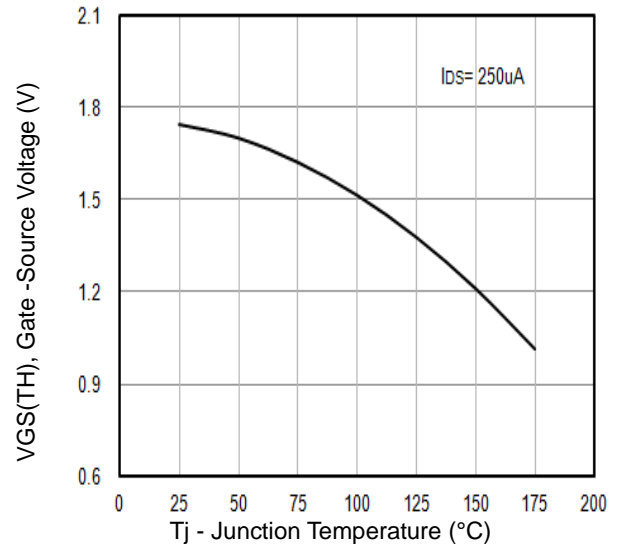


Fig2. V_{GS(TH)} Gate -Source Voltage Vs. T_j

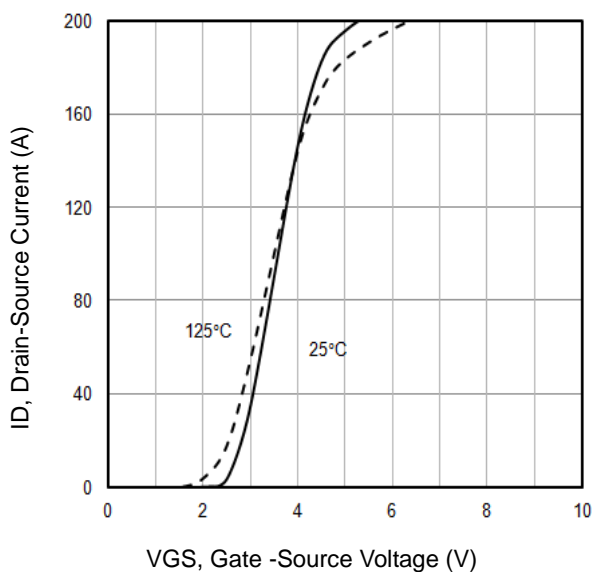


Fig3. Typical Transfer Characteristics

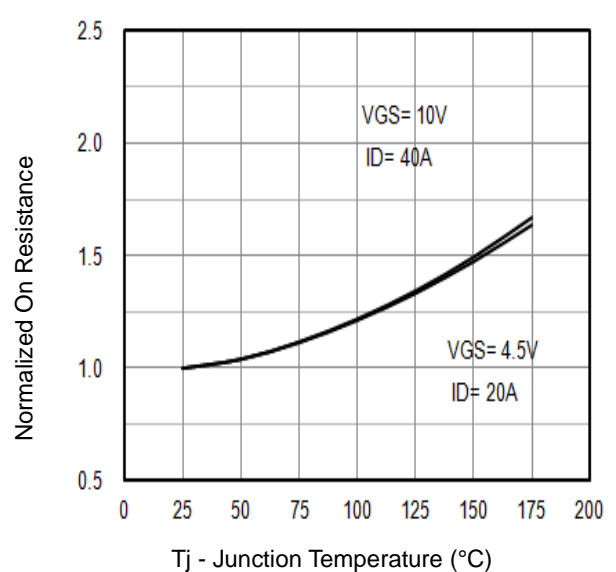


Fig4. Normalized On-Resistance Vs. Temperature

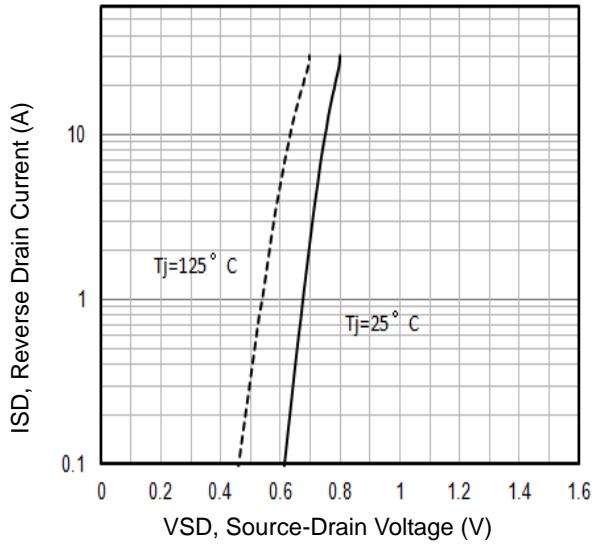


Fig5. Typical Source-Drain Diode Forward Voltage

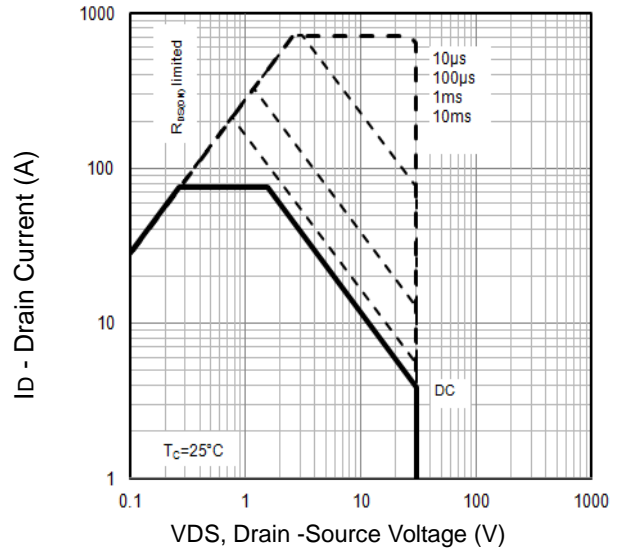


Fig6. Maximum Safe Operating Area

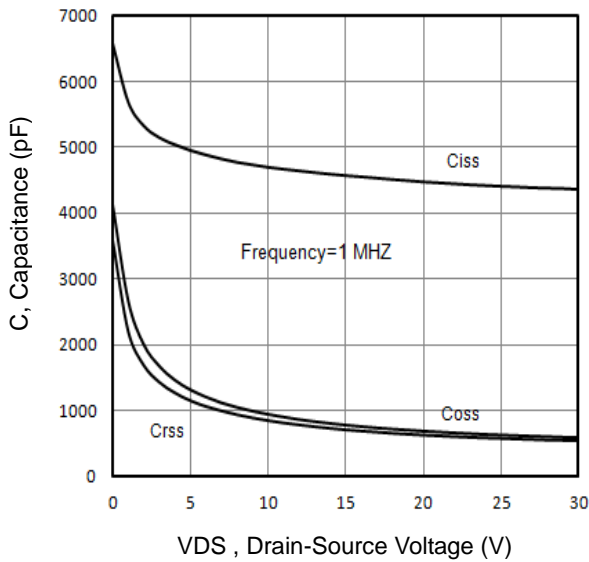


Fig7. Typical Capacitance Vs. Drain-Source Voltage

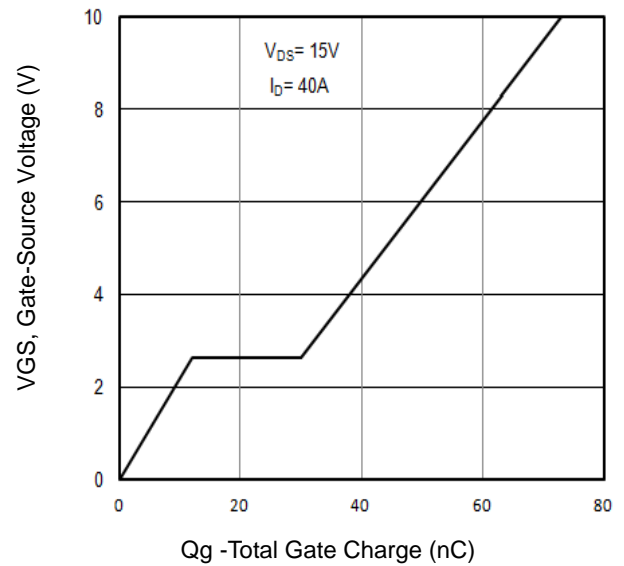


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

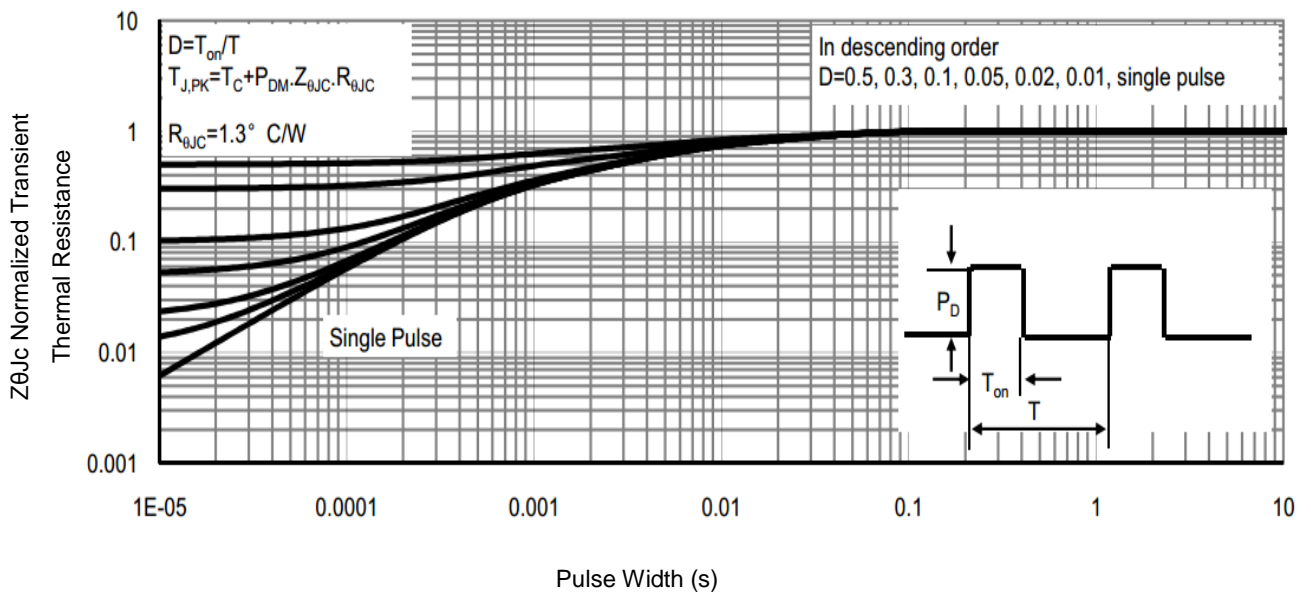


Fig9 . Normalized Maximum Transient Thermal Impedance

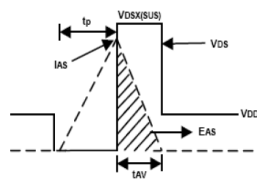
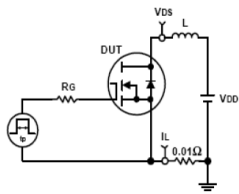


Fig10. Unclamped Inductive Test Circuit and waveforms

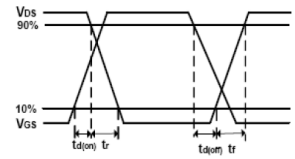
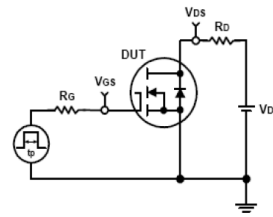


Fig11. Switching Time Test Circuit and waveforms



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