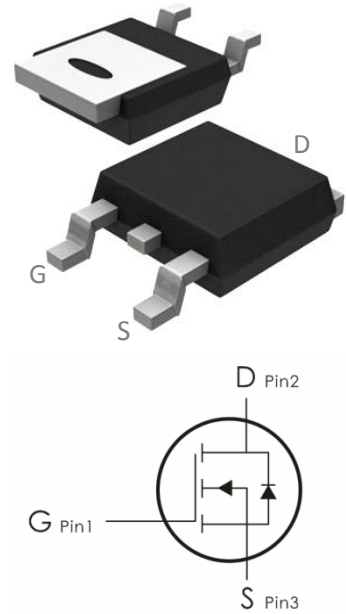


Description:

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) $V_{DS}=60V, I_D=50A, R_{DS(on)} < 17m\ \Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	50	A
	Continuous Drain Current- $T_C=100^\circ C$	33	
I_{DM}	Pulsed Drain Current ¹	200	
E_{AS}	Single Pulse Avalanche Energy ²	64	mJ
P_D	Power Dissipation, $T_C=25^\circ C$	89	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	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	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=30A$	---	12	17	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	16	25	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2900		pF
C_{oss}	Output Capacitance		---	140		
C_{rss}	Reverse Transfer Capacitance		---	124		
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=25V, I_D=30A,$ $V_{GS}=10V, R_{GEN}=1.8\Omega$	---	7.4		ns
t_r	Rise Time		---	5.1		ns
$t_{d(off)}$	Turn-Off Delay Time		---	28.2		ns
t_f	Fall Time		---	5.5		ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V,$ $I_D=30A$	---	50		nC
Q_{gs}	Gate-Source Charge		---	6		nC
Q_{gd}	Gate-Drain "Miller" Charge		---	15		nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	---	---	1.2	V
I_S	Continuous Source Current			---	50	A
I_{SM}	Pulsed Source Current			---	200	A
trr	Reverse Recovery Time	$I_F=30A, di/dt=100A/\mu\text{s}$		28	---	Ns
qrr	Reverse Recovery Charge			40	---	nc

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition : $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\ \Omega$, $I_{AS}=16\text{A}$

3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

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

FIGURE 1: OUTPUT CHARACTERISTICS

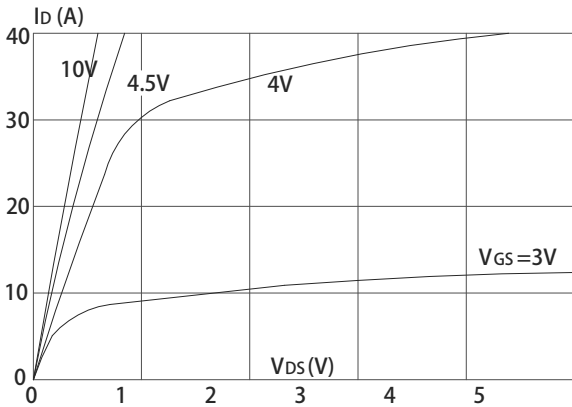


FIGURE 2: TYPICAL TRANSFER CHARACTERISTICS

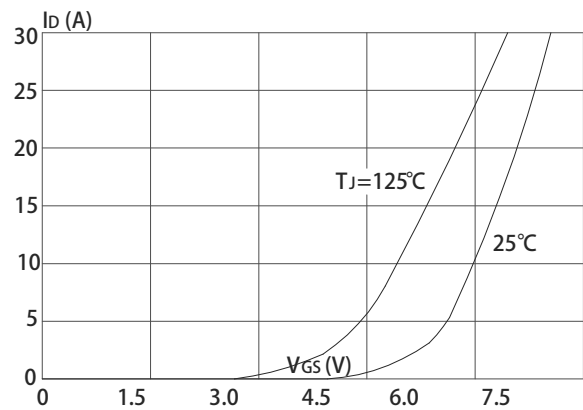


FIGURE 3: ON-RESISTANCE VS. DRAIN CURRENT

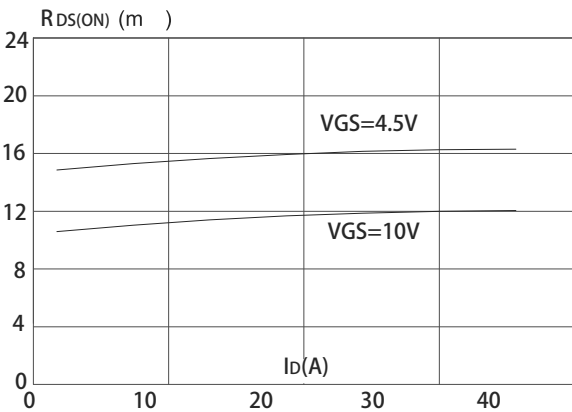


FIGURE 4: BODY DIODE CHARACTERISTICS

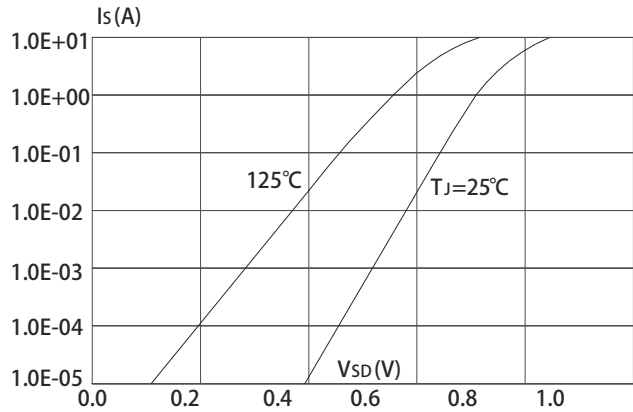


FIGURE 5: GATE CHARGE CHARACTERISTICS

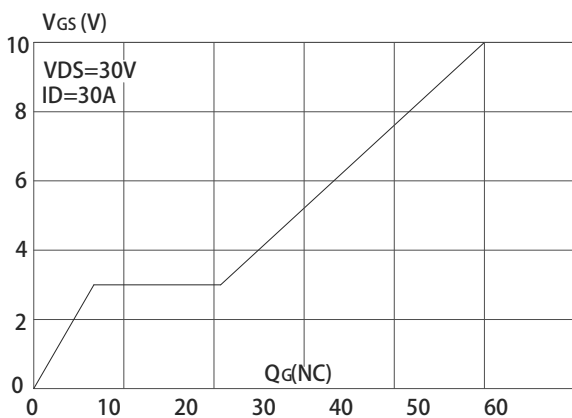


FIGURE 6: CAPACITANCE CHARACTERISTICS

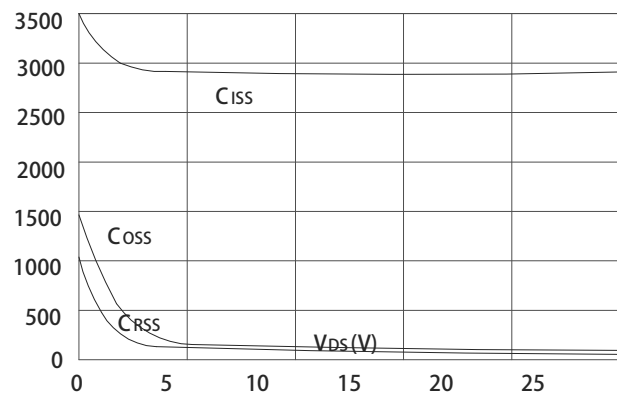


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

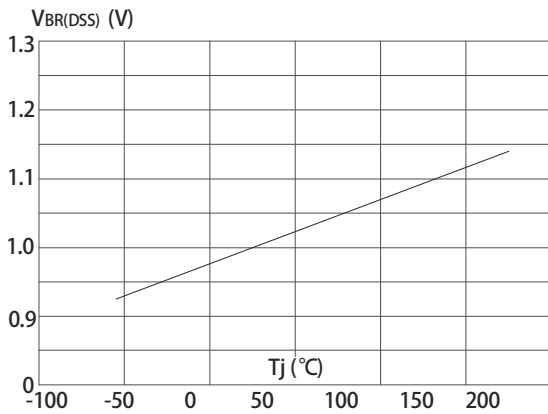


Figure 8: Normalized on Resistance vs. Junction Temperature

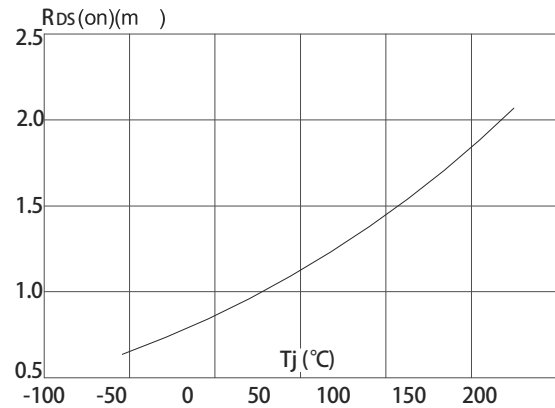


Figure 9: Maximum Safe Operating Area

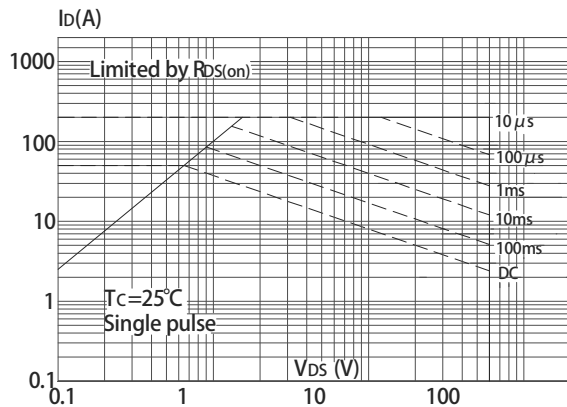


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

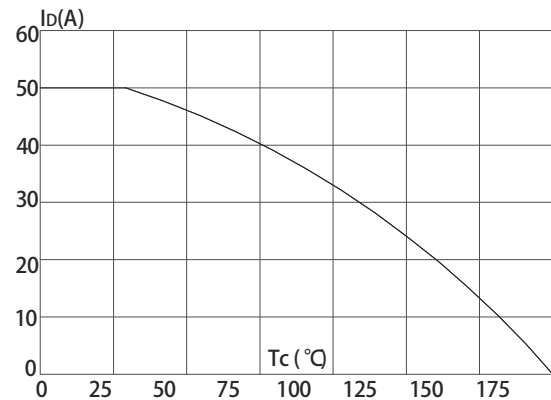
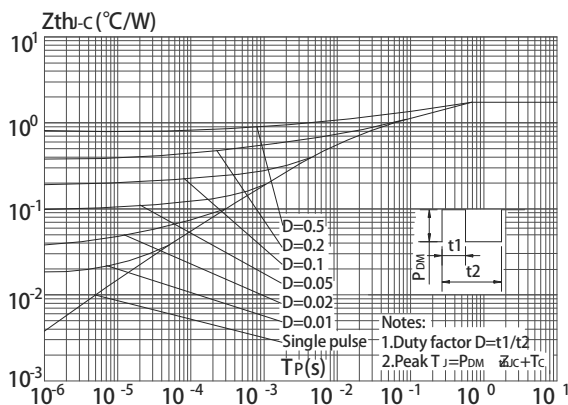


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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