

Description:

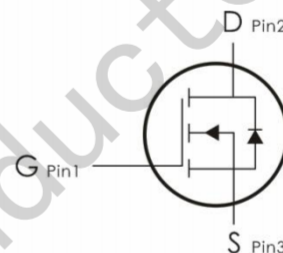
This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

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 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	55	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	A
P_D	Power Dissipation	89	W
E_{AS}	Single pulse avalanche energy	64	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.54	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁵	62	

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 μ A	60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	1.6	2.5	V
R _{DS(ON)}	Drain-Source On Resistanc ²	V _{GS} =10V, I _D =30A	---	12	17	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	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 R _{GEN} =1.8Ω , I _D =30A	---	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						
I _S	Continuous Source Current	-	---	---	50	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _D =30A	---	---	1.2	V
T _{rr}	Reverse Recovery Time	I _F =30A , dI/dt=100A/μs ,	---	28	---	ns
Q _{rr}	Reverse Recovery Charge	T _J =25 °C	---	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:

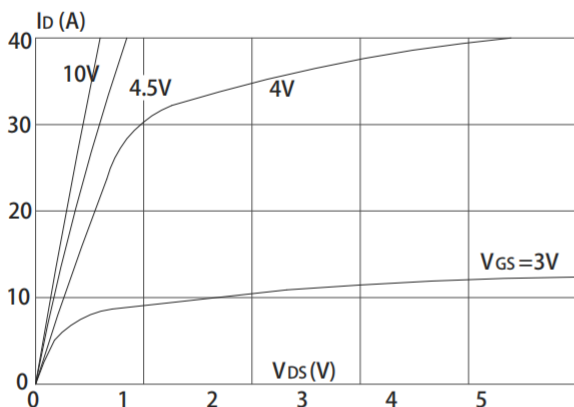


FIGURE 1: OUTPUT CHARACTERISTICS

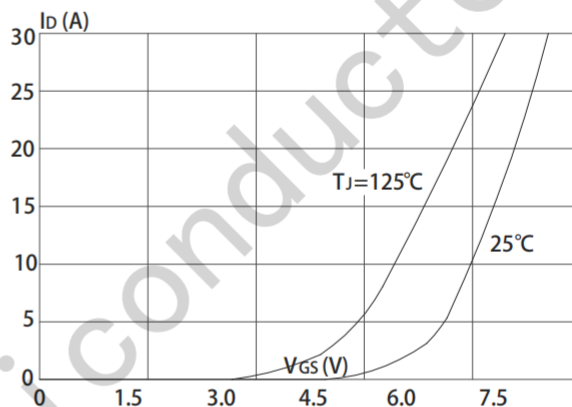


FIGURE 2: TYPICAL TRANSFER CHARACTERISTICS

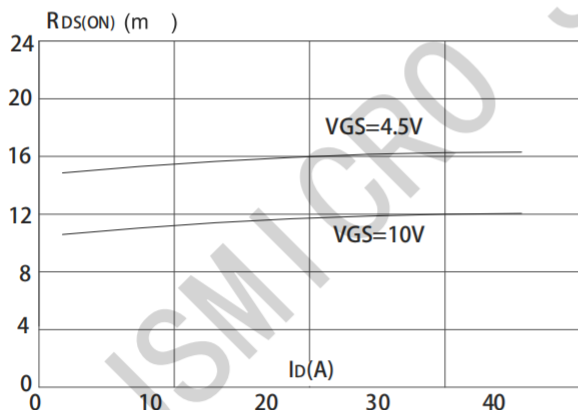


FIGURE 3: ON-RESISTANCE VS. DRAIN CURRENT

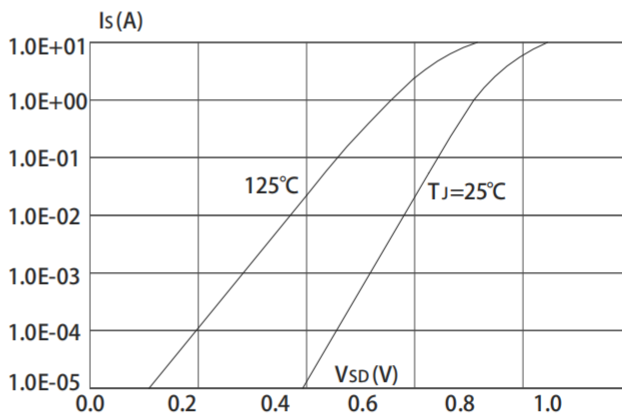


FIGURE 4: BODY DIODE CHARACTERISTICS

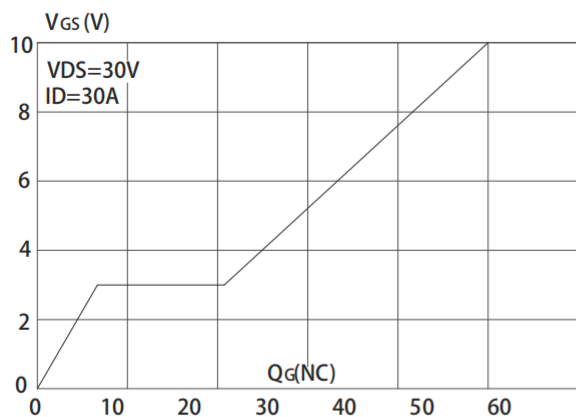


FIGURE 5: GATE CHARGE CHARACTERISTICS

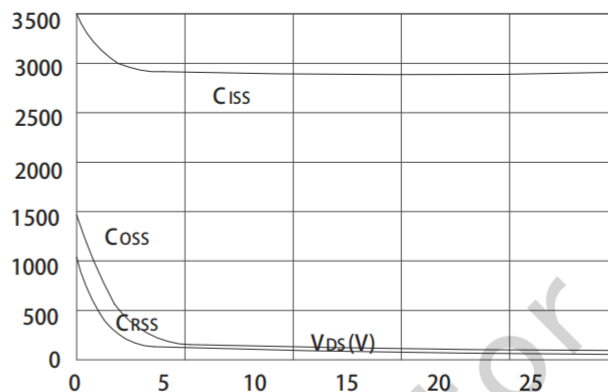


FIGURE 6: CAPACITANCE CHARACTERISTICS

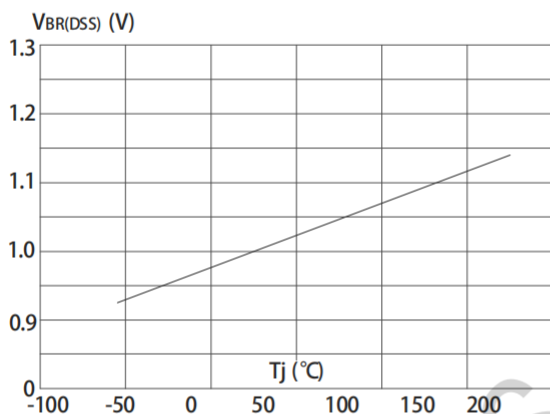


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

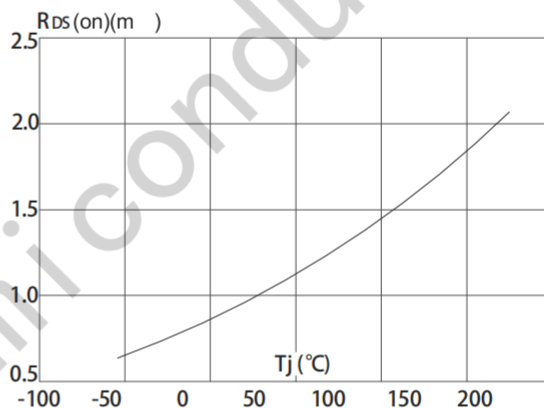


Figure 8: Normalized on Resistance vs. Junction Temperature

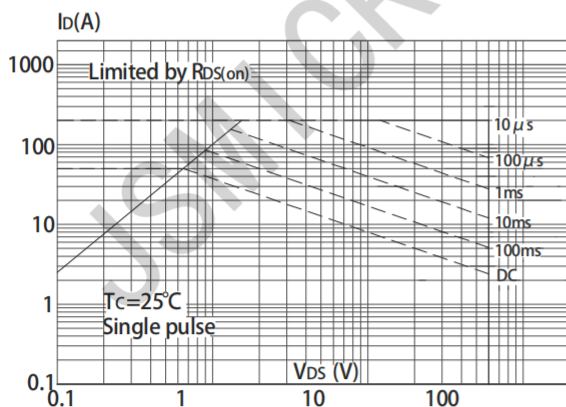


Figure 9: Maximum Safe Operating Area

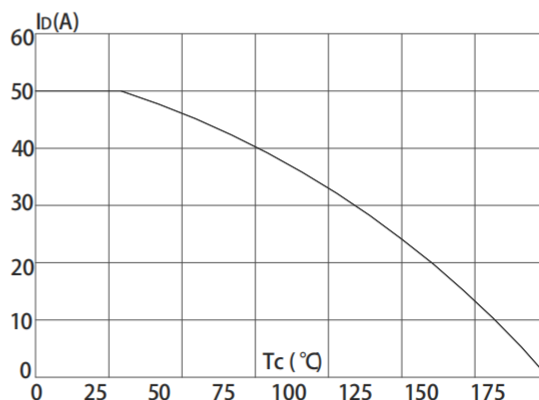


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

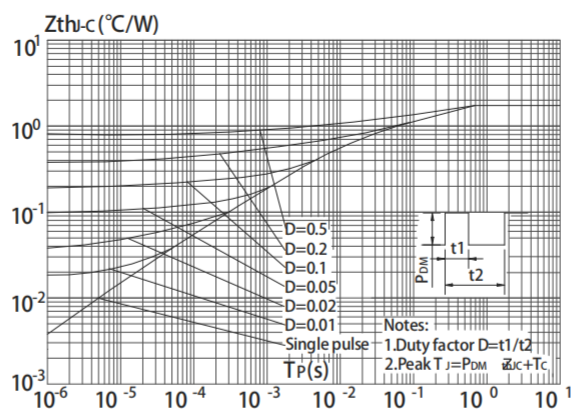
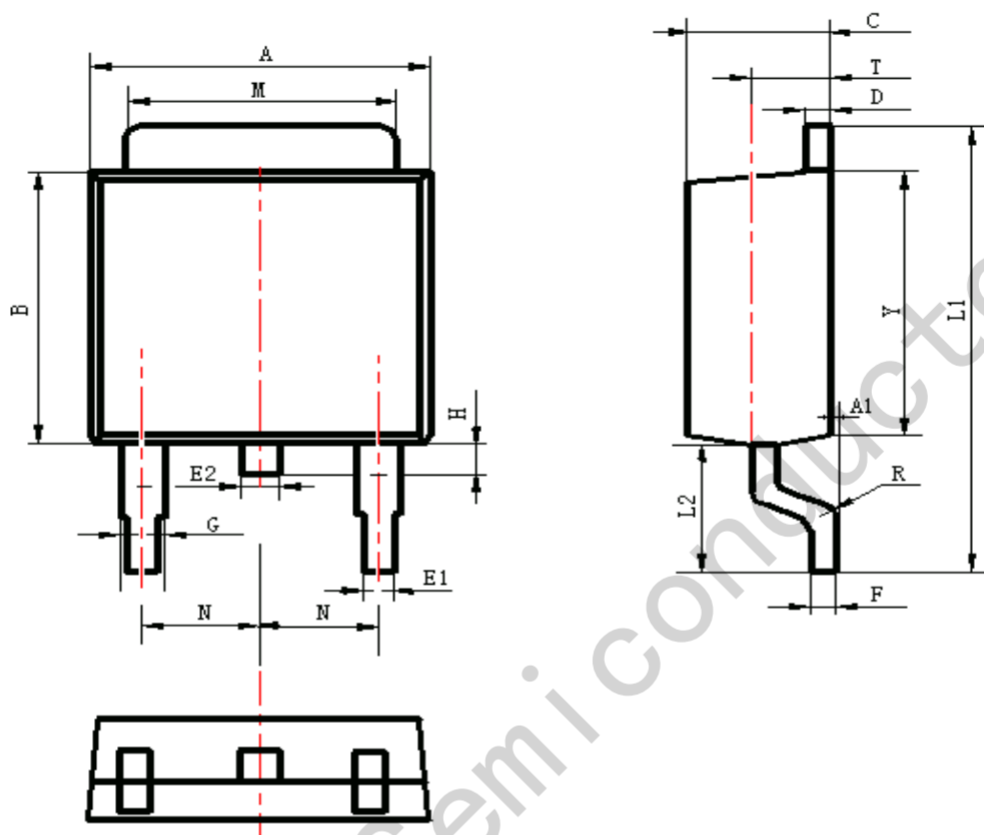


Figure.11: Maximum Effective
Transient Thermal Impedance, Junction-to-Case

Package Information

TO-252



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.30	6.90	0.248	0.272
A1	0.00	0.16	0.000	0.006
B	5.70	6.30	0.224	0.248
C	2.10	2.50	0.083	0.098
D	0.30	0.70	0.012	0.028
E1	0.60	0.90	0.024	0.035
E2	0.70	1.00	0.028	0.039
F	0.30	0.60	0.012	0.024
G	0.70	1.20	0.028	0.047
L1	9.60	10.50	0.378	0.413
L2	2.70	3.10	0.106	0.122
H	0.40	1.00	0.016	0.039
M	5.10	5.50	0.201	0.217
N	2.09	2.49	0.082	0.098
R	0.30		0.012	
T	1.40	1.60	0.055	0.063
Y	5.10	6.30	0.201	0.248