

Description:

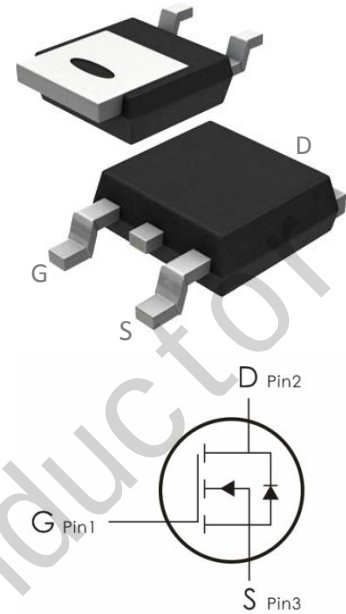
This N-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=40V, I_D=60A, R_{DS(on)} < 7m\Omega @ V_{GS}=10V$
- 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	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	60	A
	Continuous Drain Current- $T_C=100^\circ C$	39	A
I_{DM}	Pulse Drain Current Tested ^{note1}	240	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}	81	mJ
P_D	Power Dissipation $T_C = 25^\circ C$	47	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	3.2	$^\circ C/W$

Electrical Characteristics: (Tc=25°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	40	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V	---	---	1.0	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	1.0	1.7	2.5	V
R _{DS(ON)}	Drain-Source On Resistanc ²	V _{GS} =10V, I _D =30A	---	5.5	7	m Ω
		V _{GS} =4.5V, I _D =20A	---	9	12	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	2380	---	pF
C _{OSS}	Output Capacitance		---	188	---	
C _{rSS}	Reverse Transfer Capacitance		---	160	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V , V _{GS} =10V , RG=3Ω , I _D =30A	---	10	---	ns
t _r	Rise Time		---	10	---	ns
t _{d(off)}	Turn-Off Delay Time		---	35	---	ns
t _f	Fall Time		---	7	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =20V, I _D =30A	---	35	---	nC
Q _{gs}	Gate-Source Charge		---	5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	6	---	nC
Drain-Source Diode Characteristics						
I _s	Continuous Source Current ^{1· 4}	V _G =V _D =0V ,	---	---	60	A

I_{SM}	Pulsed Source Current ^{2, 4}	Force Current	---	---	240	A
V_{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =30A	---	---	1.2	V
T_{rr}	Reverse Recovery Time	I _F =20A , dI/dt=100A/μs , T _J =25°C	---	22	---	ns
Q_{rr}	Reverse Recovery Charge		---	11	---	nC

Notes:

- 1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2.EAS condition: T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25Ω, L=0.5mH, I_{AS}=18A
- 3.Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics:

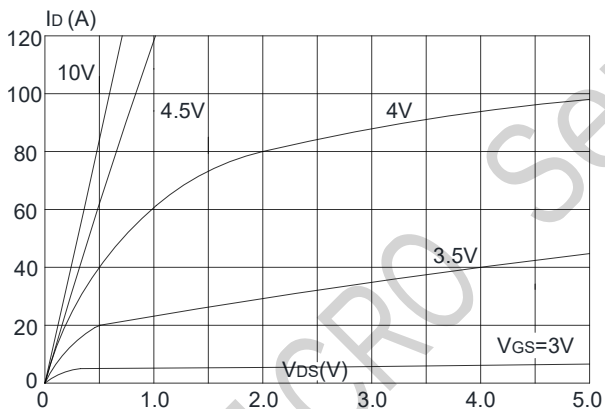


Figure1: Output Characteristics

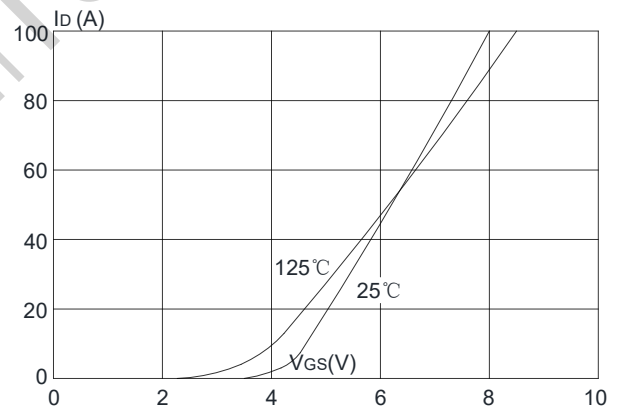


Figure 2: Typical Transfer Characteristics

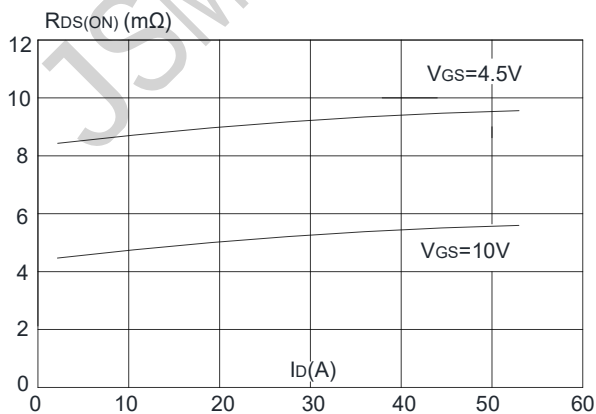


Figure 3: On-resistance vs. Drain Current

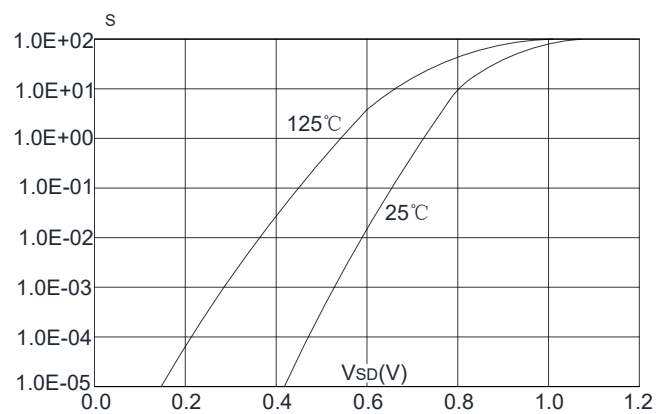
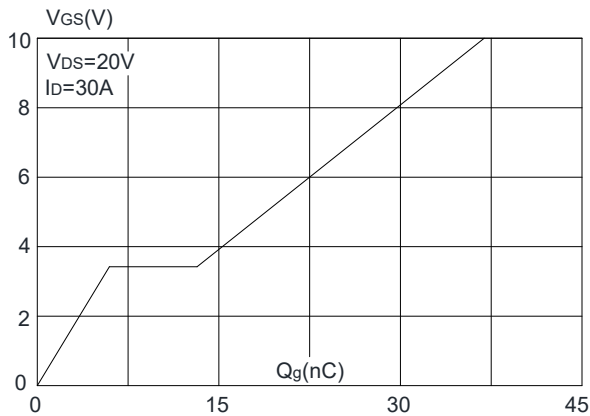
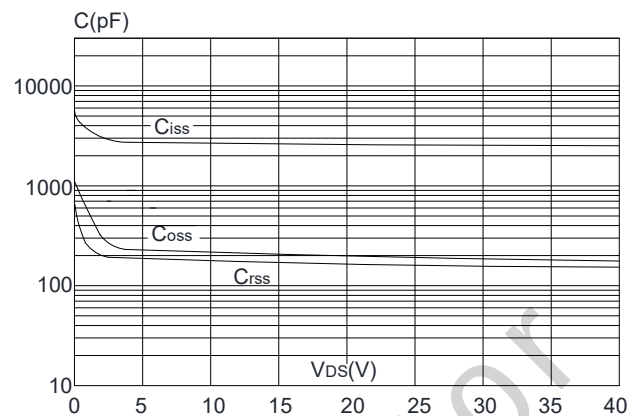
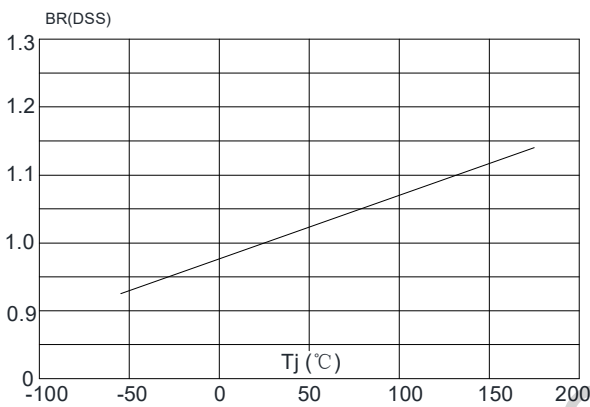
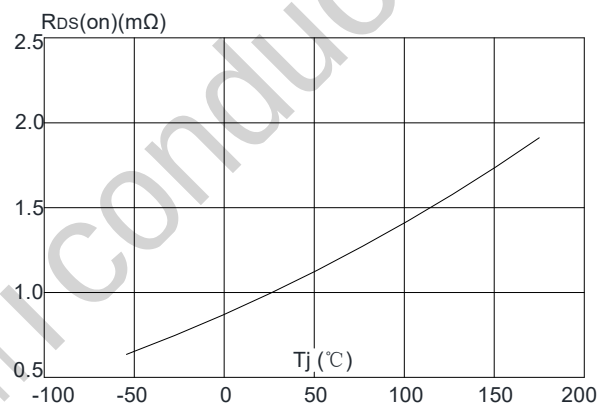
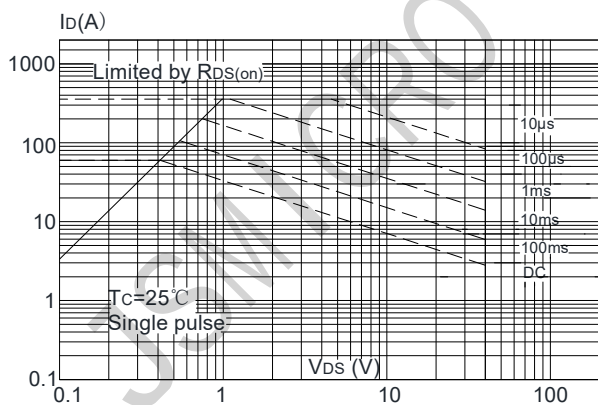
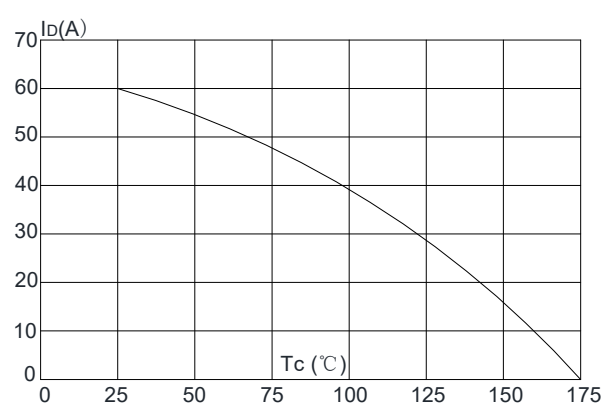


Figure 4: Body Diode Characteristics


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

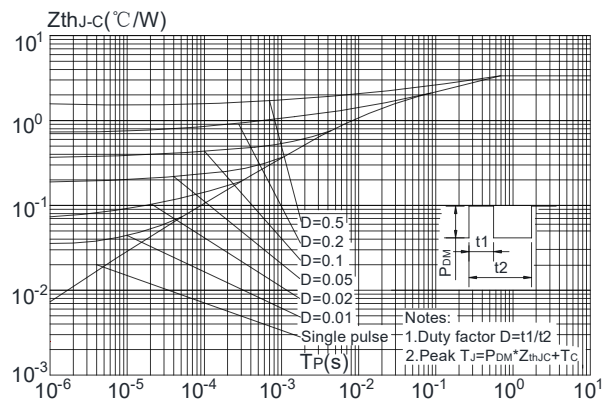


Figure.11: Maximum Effective
Transient Thermal Impedance, Junction-to-Case

外形尺寸图 / Package Dimensions

