

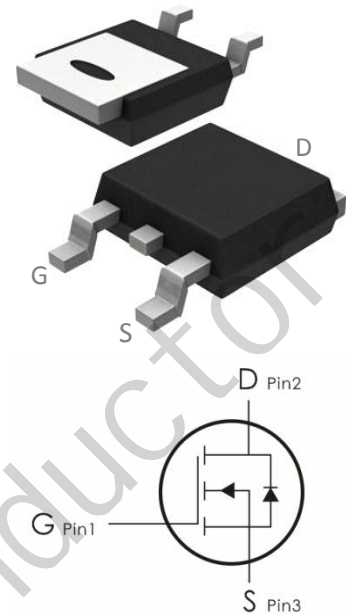
## Description:

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

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_C=25^\circ\text{C}$	60	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	39	A
$I_{DM}$	Pulse Drain Current Tested <sup>note1</sup>	240	A
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	81	mJ
$P_D$	Power Dissipation $T_C = 25^\circ\text{C}$	47	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics:

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

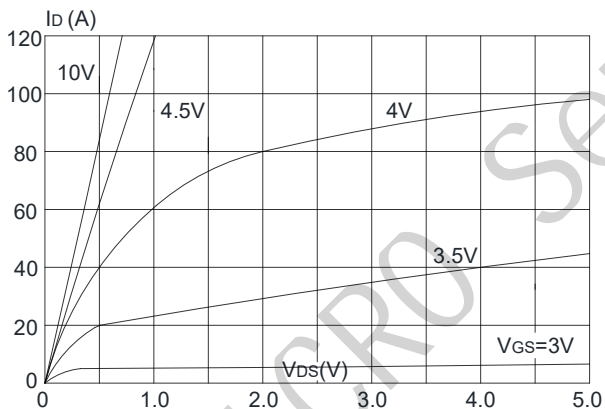
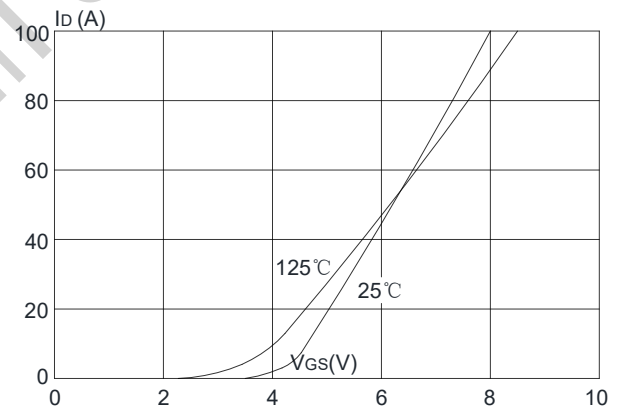
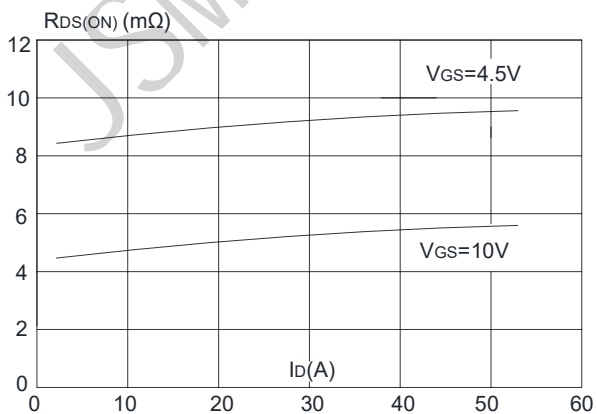
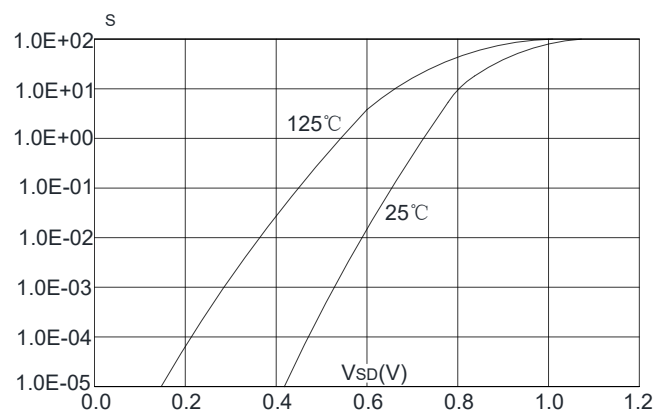
**Electrical Characteristics:** (Tc=25°C unless otherwise noted)

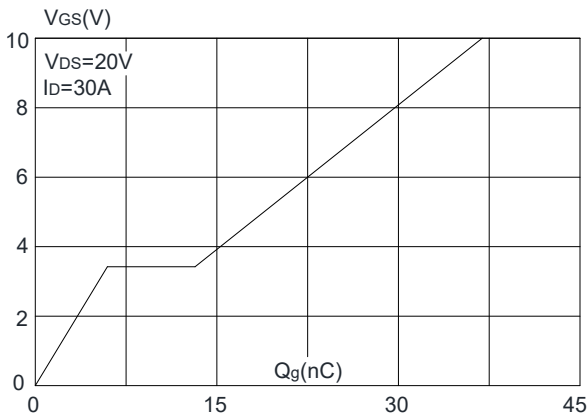
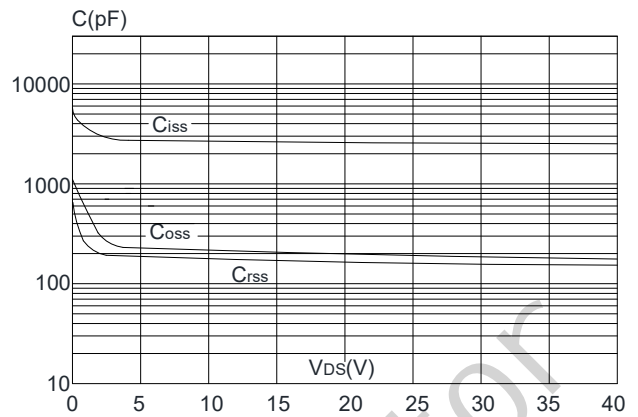
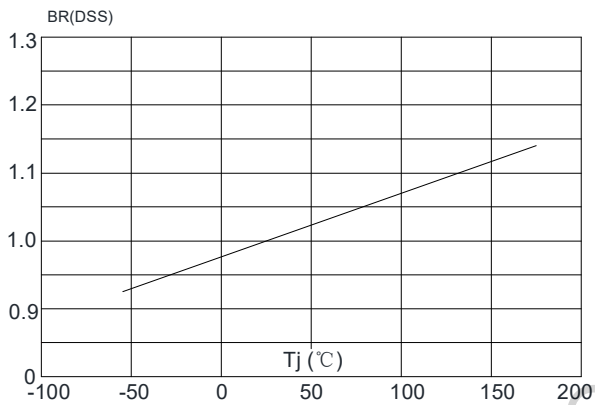
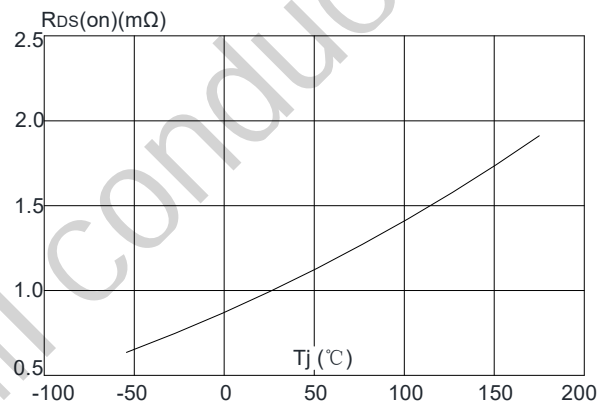
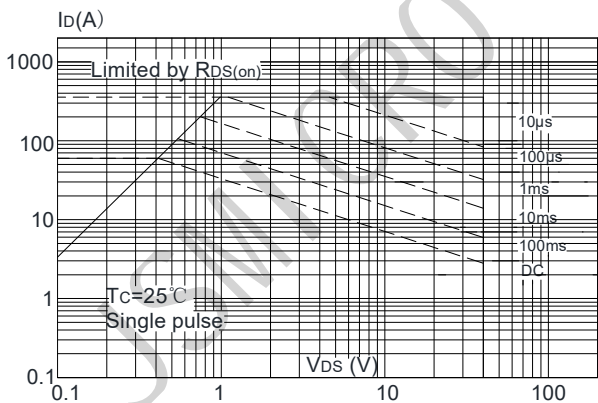
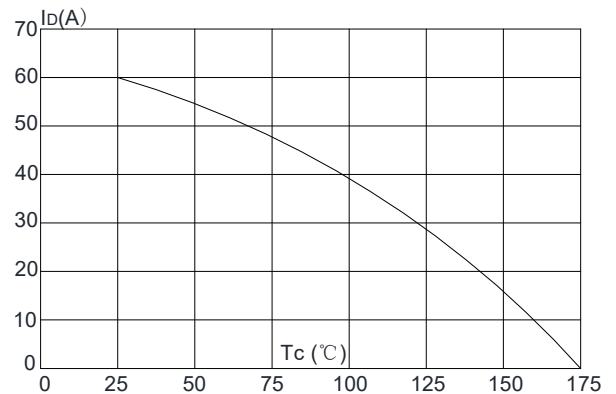
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
<b>BV<sub>DSS</sub></b>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	40	---	---	V
<b>I<sub>DSS</sub></b>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V	---	---	1.0	μA
<b>I<sub>GSS</sub></b>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0A	---	---	±100	nA
<b>On Characteristics</b>						
<b>V<sub>GS(th)</sub></b>	GATE-Source Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250 μA	1.0	1.7	2.5	V
<b>R<sub>DS(on)</sub></b>	Drain-Source On Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A	---	5.5	7	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	---	9	12	mΩ
<b>Dynamic Characteristics</b>						
<b>C<sub>iss</sub></b>	Input Capacitance	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz	---	2380	---	pF
<b>C<sub>oss</sub></b>	Output Capacitance		---	188	---	
<b>C<sub>rss</sub></b>	Reverse Transfer Capacitance		---	160	---	
<b>Switching Characteristics</b>						
<b>t<sub>d(on)</sub></b>	Turn-On Delay Time	V <sub>DD</sub> =20V, V <sub>GS</sub> =10V, RG=3Ω, I <sub>D</sub> =30A	---	10	---	ns
<b>t<sub>r</sub></b>	Rise Time		---	10	---	ns
<b>t<sub>d(off)</sub></b>	Turn-Off Delay Time		---	35	---	ns
<b>t<sub>f</sub></b>	Fall Time		---	7	---	ns
<b>Q<sub>g</sub></b>	Total Gate Charge		---	35	---	nC
<b>Q<sub>gs</sub></b>	Gate-Source Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =20V, I <sub>D</sub> =30A	---	5	---	nC
<b>Q<sub>gd</sub></b>	Gate-Drain "Miller" Charge		---	6	---	nC
<b>Drain-Source Diode Characteristics</b>						
<b>I<sub>S</sub></b>	Continuous Source Current <sup>1, 4</sup>	V <sub>G</sub> =V <sub>D</sub> =0V,	---	---	60	A

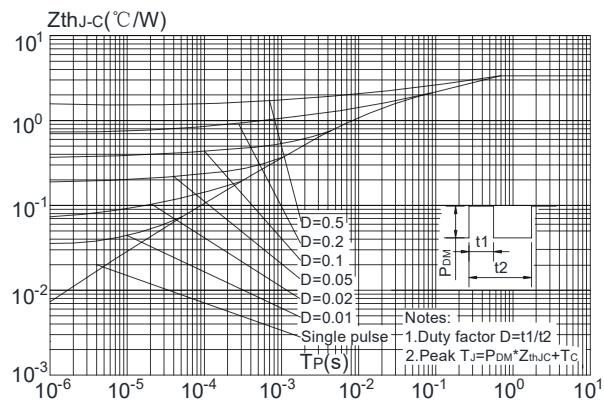
<b>I<sub>SM</sub></b>	Pulsed Source Current <sup>2, 4</sup>	Force Current	---	---	240	A
<b>V<sub>SD</sub></b>	Diode Forward Voltage <sup>2</sup>	V <sub>Gs</sub> =0V , I <sub>s</sub> =30A	---	---	1.2	V
<b>T<sub>rr</sub></b>	Reverse Recovery Time	I <sub>F</sub> =20A , dI/dt=100A/μs ,	---	22	---	ns
<b>Q<sub>rr</sub></b>	Reverse Recovery Charge	T <sub>J</sub> =25°C	---	11	---	nC

**Notes:**

- 1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2.EAS condition: T<sub>J</sub>=25°C , V<sub>DD</sub>=20V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω , L=0.5mH, I<sub>AS</sub>=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

