



## 20V Single P-Channel Enhancement-Mode MOSFET

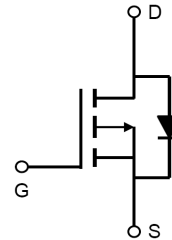
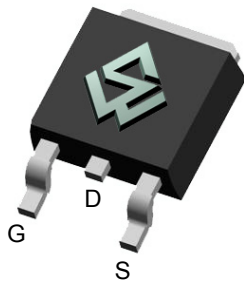
### General Description

- Low gate charge.
- Uses advanced trench process technology.
- Use in PWM applications

### Product Summary

- $BV_{DSS}$  -20V
- $R_{DS(on)}$  @VGS = -10V < 8.5mΩ
- $R_{DS(on)}$  @VGS = -4.5V < 12mΩ

TO-252 D-PAK



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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	±12	V
Drain Current ( $T_C=25^\circ\text{C}$ )	$I_D$	-60	A
Drain Current ( $T_C=75^\circ\text{C}$ )		-39	
Drain Current ( $T_A=25^\circ\text{C}$ )		-35	
Drain Current ( $T_A=75^\circ\text{C}$ )		-15	
Pulsed Drain Current <sup>a</sup>	$I_{DM}$	-240	A
Power Dissipation <sup>b</sup> ( $T_C=25^\circ\text{C}$ )	$P_D$	70	W
Power Dissipation <sup>b</sup> ( $T_A=25^\circ\text{C}$ )		2.5	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 ~ +150	°C

### Thermal Characteristics

Parameter	Symbol	Maximum	Units
Junction-to-Ambient <sup>a</sup> ( $t \leq 10\text{s}$ )	$R_{\theta JA}$	15	°C/W
Junction-to-Ambient <sup>a,d</sup> (Steady-State)		45	°C/W
Junction-to-Lead (Steady-State)	$R_{\theta JL}$	5	°C/W



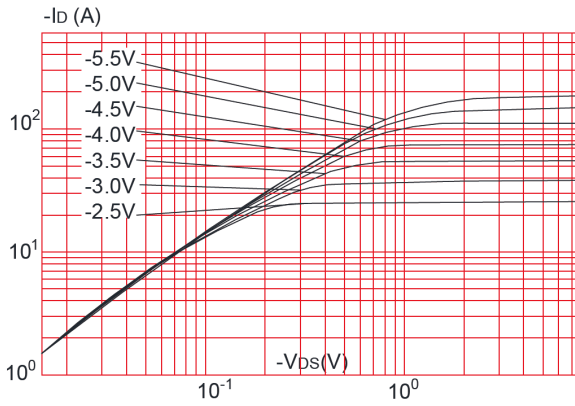
Electrical Characteristics (T <sub>A</sub> = 25°C unless otherwise noted)						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> = 0V , I <sub>D</sub> = -250uA	-20			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -20V , V <sub>GS</sub> = 0V			-1	uA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250uA	-0.35		-1.0	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> = -10V , I <sub>D</sub> = -15A		6.6	8.5	mΩ
		V <sub>GS</sub> = -4.5V , I <sub>D</sub> = -10A		8	12	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> = -5V , I <sub>D</sub> = -15A		30		S
<b>Drain-Source Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> = 0V , I <sub>S</sub> = -20A			-1.2	V
I <sub>S</sub>	Maximum Body-Diode Continuous Current				-60	A
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = -10V , V <sub>GS</sub> = 0V f = 1.0MHz		4210		pF
C <sub>oss</sub>	Output Capacitance			515		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			440		pF
<b>Switching Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> = -10V , I <sub>D</sub> = -15A V <sub>GS</sub> = -4.5V		40.2		nC
Q <sub>gs</sub>	Gate-Source Charge			7.2		nC
Q <sub>gd</sub>	Gate-Drain Charge			13		nC
t <sub>D(ON)</sub>	Turn-On Delay Time	V <sub>DD</sub> = -10V V <sub>GS</sub> = -10 V R <sub>GEN</sub> = -2.7ohm		9		ns
t <sub>r</sub>	Turn-On Rise Time			56		ns
t <sub>D(OFF)</sub>	Turn-Off Delay Time			129		ns
t <sub>f</sub>	Turn-Off Fall Time			48		ns

- Repetitive rating, Pulse width limited by junction temperature T<sub>J(MAX)</sub>=150 °C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25 °C
- The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150 °C , using ≤10s junction-to-ambient thermal resistance.
- The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The value in any given application depends on the user's specific board design.
- The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

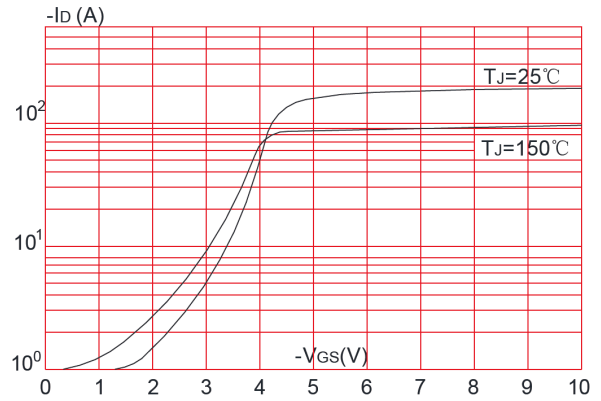


## Typical Characteristics

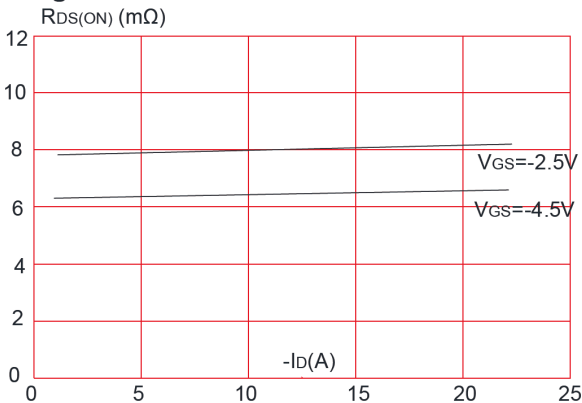
**Figure 1: Output Characteristics**



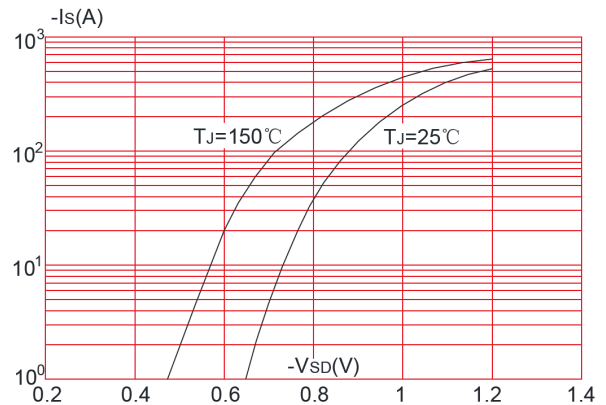
**Figure 2: Typical Transfer Characteristics**



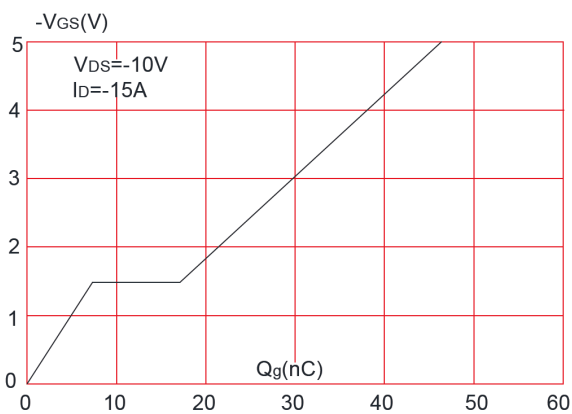
**Figure 3: On-resistance vs. Drain Current**



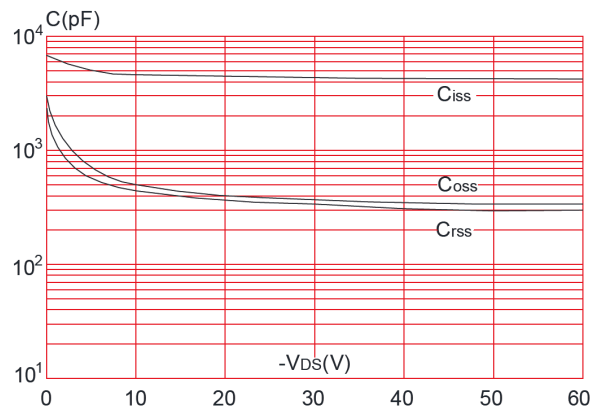
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**



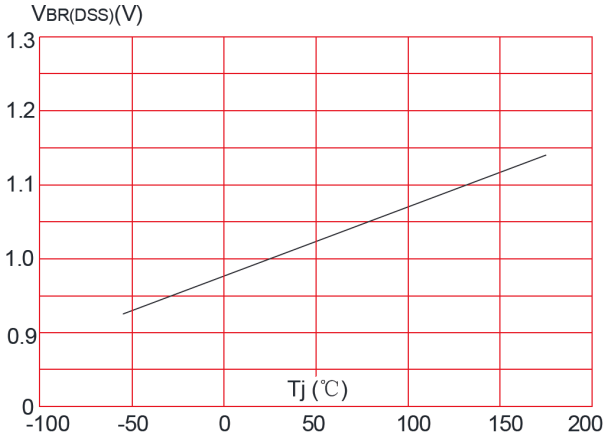
**Figure 6: Capacitance Characteristics**



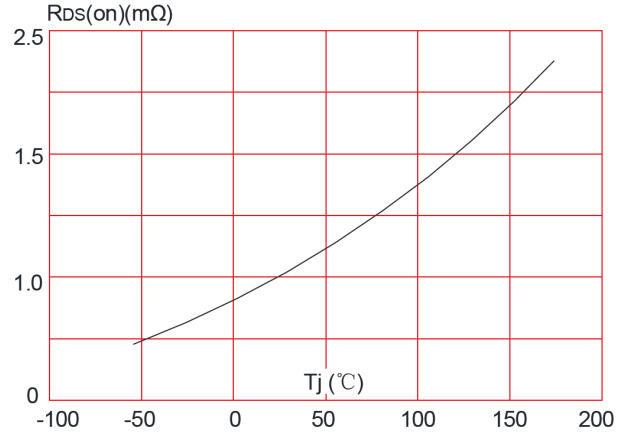


## Typical Characteristics

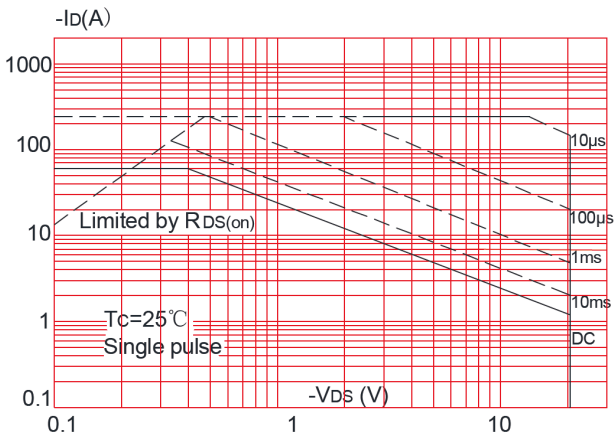
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



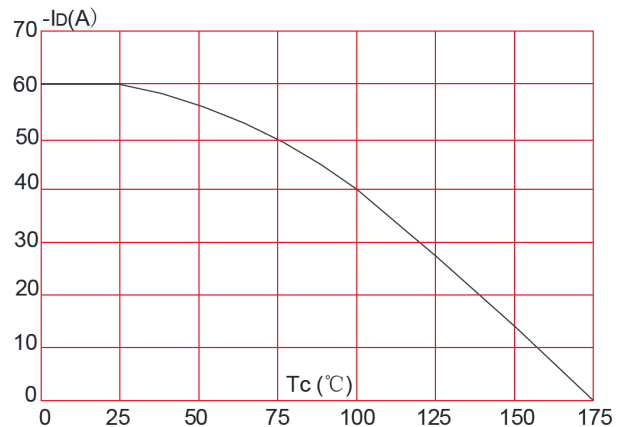
**Figure 8:** Normalized on Resistance vs. Junction Temperature



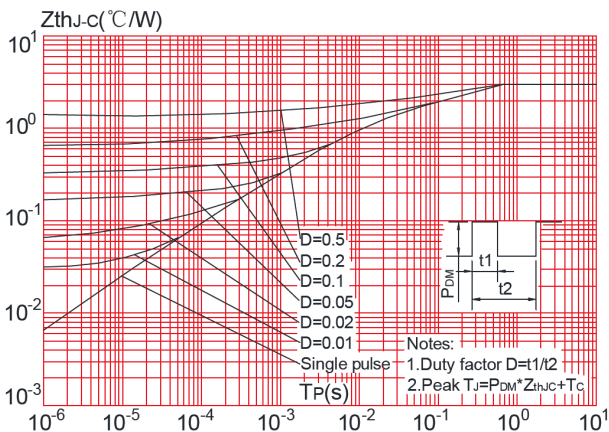
**Figure 9:** Maximum Safe Operating Area



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

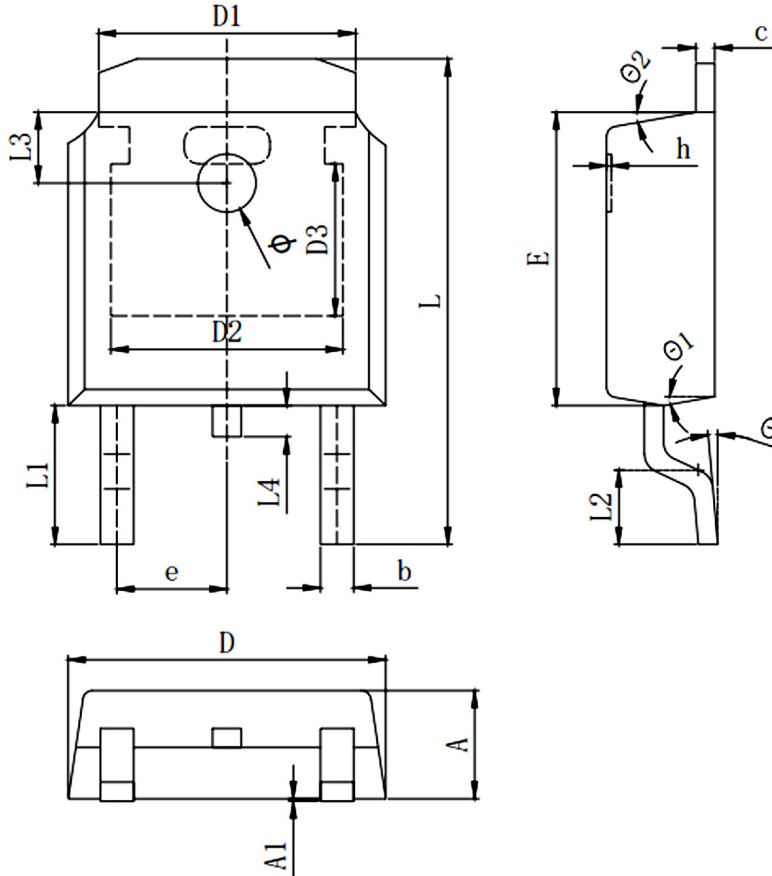


**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case





## TO-252 D-PAK Package



Symbols	Millimeters		
	MIN.	Mom.	MAX.
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
$\Phi$	1.100	1.200	1.300
$\theta$	0°		8°
$\theta_1$	9° TYP		
$\theta_2$	9° TYP		

单击下面可查看定价，库存，交付和生命周期等信息

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