



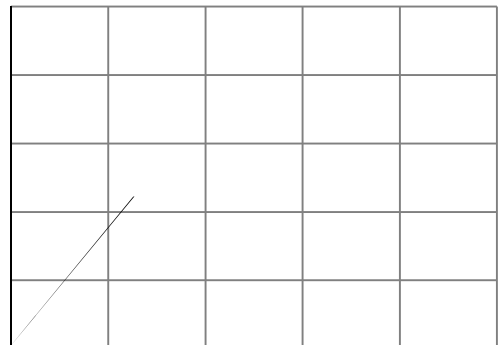
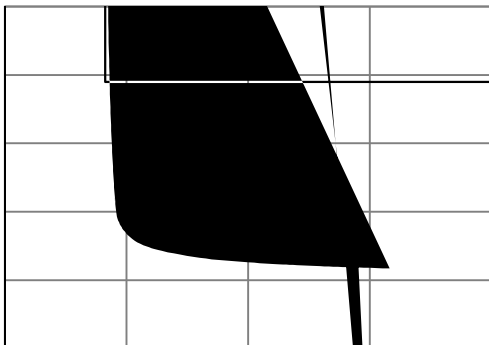
### Product Summary

- Low On-Resistance
- Excellent Gate Charge x  $R_{DS(ON)}$  Product (FOM)
- Pb-Free Lead Plating
- RoHS and Halogen-Free Compliant
- 100% UIS Tested, 100%  $R_g$  Tested

	Value	Unit
	-100	V
	-2.0	V
	-30	A
	37	m
$R_{DS(ON)_Typ}$	50	m

### Ordering Information

Device	Package	# of Pins	Marking	M	M	o <sup>2</sup>	M
Drain-to-Source - e	M 1						
(1)	$T_C$ 1 25°C		$I_D$		-30		A
	$T_C$ 1 100°C				-19		
Avalanche Current <sup>(3)</sup>					-27		
Avalanche Energy <sup>(3)</sup>					109		
Power Dissipation <sup>(4)</sup>	$T_C$ 1 25°C		$P_D$		96		W
	$T_C$ 1 100°C				38		
Junction & Storage Temperature Range					-55 to 150		



**Electrical Characteristics** (@  $T_J = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -250\text{ A}, V_{GS} = 0\text{V}$	-100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -80\text{V}, V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$			-1.0 -5.0	A
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ A}$	-1.0	-2.0	-3.0	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -15\text{A}$		37	50	m
		$V_{GS} = -4.5\text{V}, I_D = -10\text{A}$		50	66	m
Forward Transconductance	$g_{FS}$	$V_{DS} = -5\text{V}, I_D = -15\text{A}$		30		S
Diode Forward Voltage	$V_{SD}$	$I_S = -1\text{A}, V_{GS} = 0\text{V}$		-0.7	-1.0	V
Diode Continuous Current	$I_S$	$T_C = 25^\circ\text{C}$			-96	A

<b>DYNAMIC PARAMETERS</b> <sup>(5)</sup>						
Input Capacitance	$C_{iss}$			1412		pF
Output Capacitance	$C_{oss}$	$V_{GS} = 0\text{V}, V_{DS} = -50\text{V}, f = 1\text{MHz}$		222		pF
Reverse Transfer Capacitance	$C_{rss}$			2.6		pF
Gate Resistance	$R_g$	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$		10.2		

<b>SWITCHING PARAMETERS</b> <sup>(5)</sup>						
Total Gate Charge (@ $V_{GS} = -10\text{V}$ )	$Q_g$			20		nC
Total Gate Charge (@ $V_{GS} = -6.0\text{V}$ )	$Q_g$	$V_{GS} = 0\text{ to } -10\text{V}$		12.6		nC
Gate Source Charge	$Q_{gs}$	$V_{DS} = -50\text{V}, I_D = -15\text{A}$		6.4		nC
Gate Drain Charge	$Q_{gd}$			3.3		nC
Turn-On DelayTime	$t_{D(on)}$			10.7		ns
Turn-On Rise Time	$t_r$	$V_{GS} = -10\text{V}, V_{DS} = -50\text{V}$		56		ns
Turn-Off DelayTime	$t_{D(off)}$	$R_L = 3.3, R_{GEN} = 6$		45		ns
Turn-Off Fall Time	$t_f$			81		ns
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = -15\text{A}, di_F/dt = -100\text{A}/\text{s}$		51		ns
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F = -15\text{A}, di_F/dt = -100\text{A}/\text{s}$		130		nC

**Thermal Performance**

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{JA}$	47	56	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{JC}$	1.0	1.3	$^\circ\text{C}/\text{W}$

**Notes:**

1. Computed continuous current assumes the condition of  $T_{J\_Max}$  while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under  $T_{J\_Max} = 150^\circ\text{C}$ .
3. This single-pulse measurement was taken under the following condition [ $L = 300\text{ H}, V_{GS} = -10\text{V}, V_{DD} = -50\text{V}$ ] while its value is limited by  $T_{J\_Max} = 150^\circ\text{C}$ .
4. The power dissipation  $P_D$  is based on  $T_{J\_Max} = 150^\circ\text{C}$ .
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics

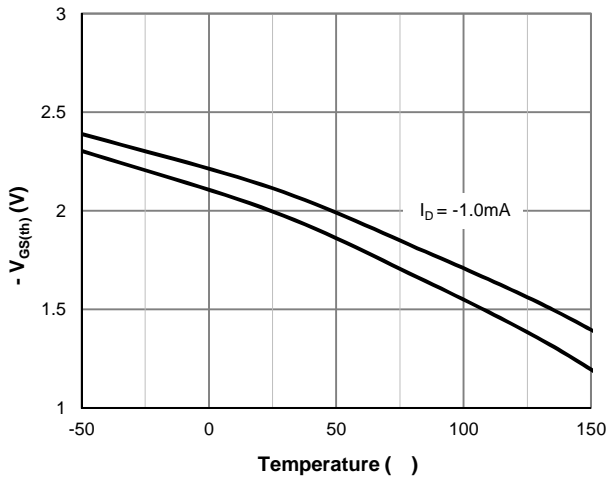
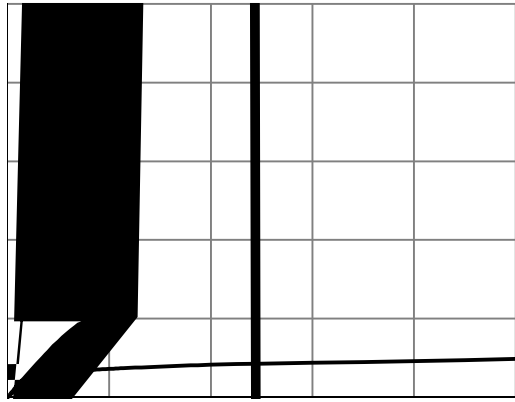


Figure 5:  $V_{GS(th)}$  vs. Junction Temperature







TO-252-3L Package Information

