

Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-30			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D = -250\mu\text{A}$, Referenced to 25°C		-22		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0\text{V}$, $V_{DS} = -24\text{V}$			-1	μA
I_{GSS}	Gate-Body Leakage	$V_{GS} = \pm 25\text{V}$, $V_{DS} = 0\text{V}$			± 100	nA

On Characteristics (Note 2)

$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-1	-1.8	-3	V
$\frac{\Delta V_{GS(TH)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	$I_D = -250\mu\text{A}$, Referenced to 25°C		4		mV/ $^\circ\text{C}$
$r_{DS(on)}$	Static Drain-Source On-Resistance	$I_D = -4\text{A}$, $V_{GS} = -10\text{V}$		44	50	m Ω
		$I_D = -3.4\text{A}$, $V_{GS} = -4.5\text{V}$		67	75	
		$I_D = -4\text{A}$, $V_{GS} = -10\text{V}$, $T_J = 125^\circ\text{C}$		60	70	
$I_{D(ON)}$	On-State Drain Current	$V_{GS} = -10\text{V}$, $V_{DS} = -5\text{V}$	-20			A
g_{FS}	Forward Transconductance	$I_D = -4\text{A}$, $V_{DS} = -5\text{V}$		8.4		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -15\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$		470	680	pF
C_{oss}	Output Capacitance			126	180	pF
C_{rss}	Reverse Transfer Capacitance			61	90	pF

Switching Characteristics (Note 2)

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -15\text{V}$, $I_D = -1\text{A}$ $V_{GS} = -10\text{V}$, $R_{GEN} = 6\Omega$		7	14	ns
t_r	Turn-On Rise Time			12	22	ns
$t_{d(off)}$	Turn-Off Delay Time			16	29	ns
t_f	Turn-Off Fall Time			6	12	ns
Q_g	Total Gate Charge	$V_{DS} = -15\text{V}$, $I_D = -4\text{A}$, $V_{GS} = -5\text{V}$		6	8.1	nC
Q_{gs}	Gate-Source Charge			2.1		nC
Q_{gd}	Gate-Drain Charge			2		nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current			-1.3	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0V, I _S = -1.3 A (Note 2)	-0.77	-1.2	V

Notes:

1: $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



a) 78°C/W when mounted on a
1 in² pad of 2 oz copper



b) 156°C/W when mounted on a
minimum pad of 2 oz copper

Scale 1: 1 on letter size paper

2: Pulse Test: Pulse Width < 300 μs , Duty Cycle < 2.0%

Typical Characteristics

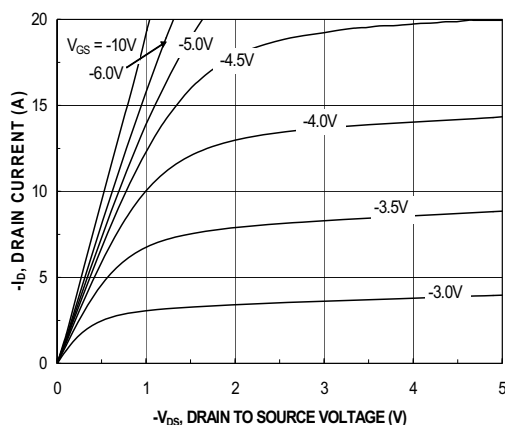


Figure 1. On-Region Characteristics

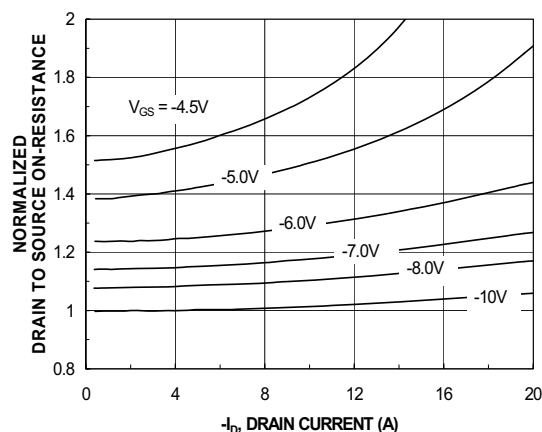


Figure 2. Normalized On-Resistance vs Drain Current and Gate Voltage

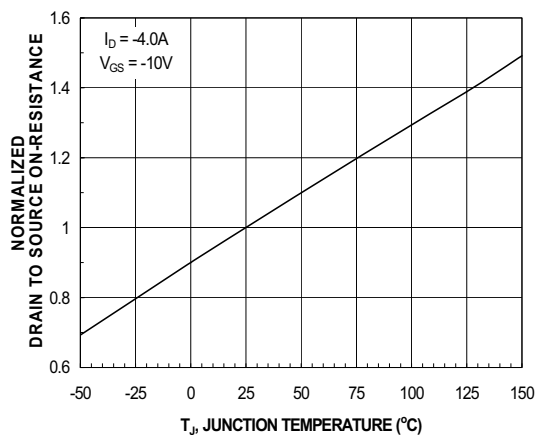


Figure 3. Normalized On-Resistance vs Junction Temperature

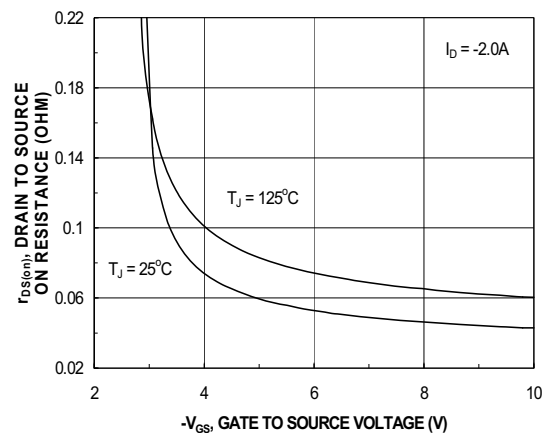


Figure 4. On-Resistance vs Gate to Source Voltage

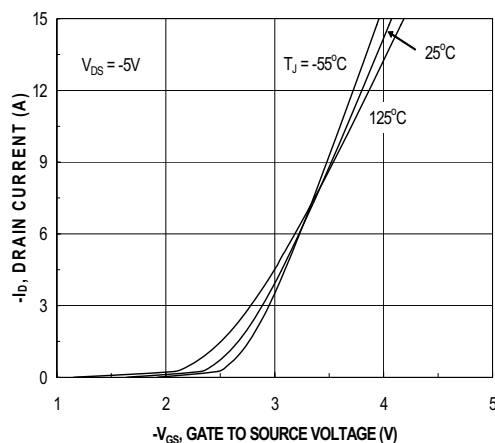


Figure 5. Transfer Characteristics

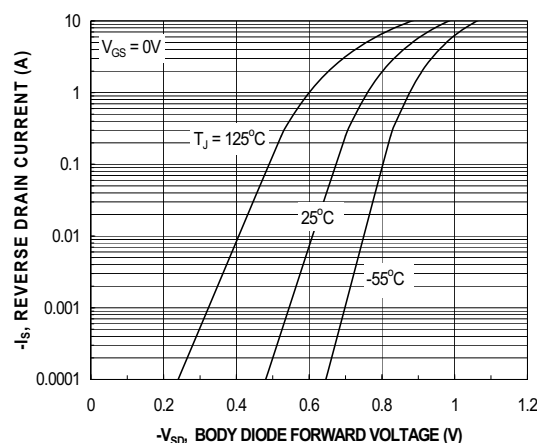


Figure 6. Source to Drain Diode Forward Voltage vs Source Current

Typical Characteristics

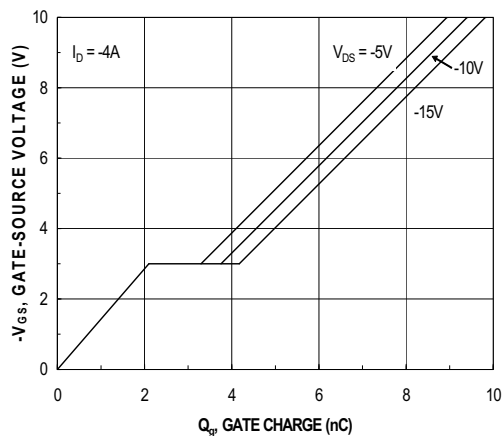


Figure 7. Gate Charge Characteristics

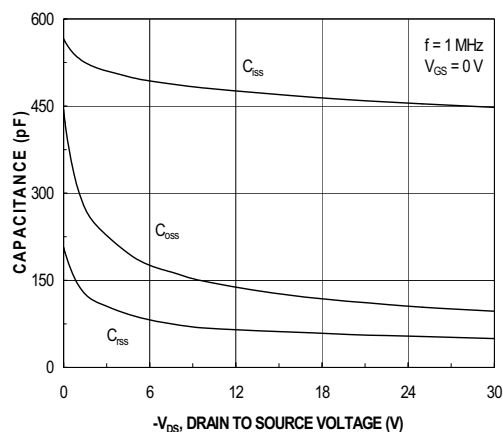


Figure 8. Capacitance vs Drain to Source Voltage

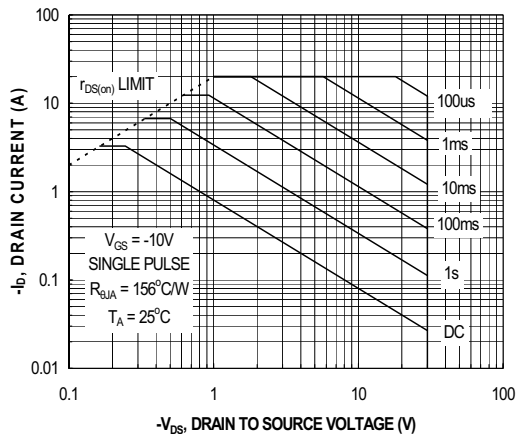


Figure 9. Forward Bias Safe Operating Area

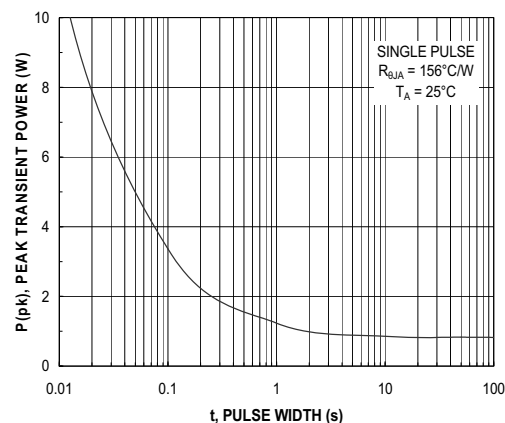


Figure 10. Single Pulse Maximum Power Dissipation

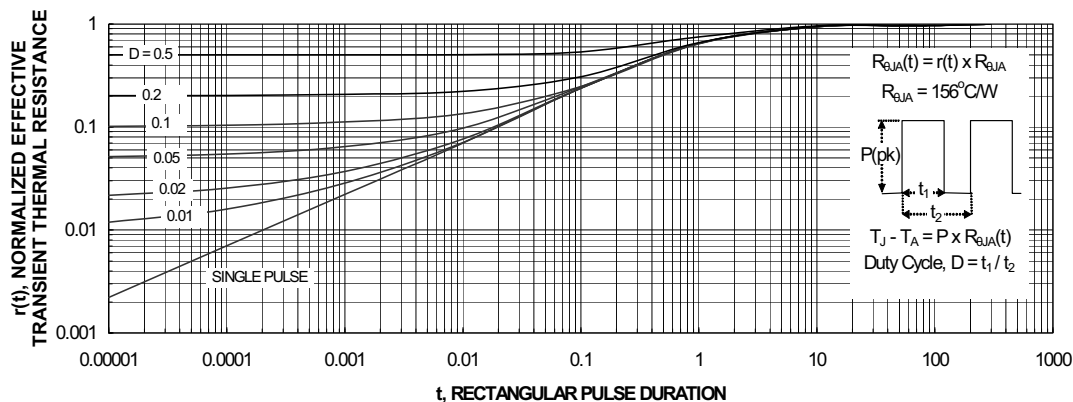


Figure 11. Transient Thermal Response Curve

Thermal characterization performed using the conditions described in Note 1b.
Transient thermal response will change depending on the circuit board design.

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