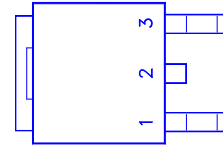
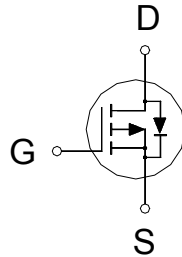




**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-40V	55mΩ	-21A



- 1. GATE
- 2. DRAIN
- 3. SOURCE

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ °C}$  Unless Otherwise Noted)**

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	-40	V
Gate-Source Voltage		$V_{GS}$	±20	V
Continuous Drain Current	$T_C = 25\text{ °C}$	$I_D$	-21	A
	$T_C = 100\text{ °C}$		-13	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	-39	
Power Dissipation	$T_C = 25\text{ °C}$	$P_D$	41	W
	$T_C = 100\text{ °C}$		16	
Operating Junction & Storage Temperature Range		$T_j, T_{stg}$	-55 to 150	°C

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	°C / W
Junction-to-Ambient	$R_{\theta JA}$		75	°C / W

<sup>1</sup>Pulse width limited by maximum junction temperature.

**ELECTRICAL CHARACTERISTICS ( $T_J = 25\text{ °C}$ , Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.5	-2	-3	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			±250	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -32V, V_{GS} = 0V$			1	μA
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 125\text{ °C}$			10	
On-State Drain Current <sup>1</sup>	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	-96			A

Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -6A$	65	94	m $\Omega$
		$V_{GS} = -10V, I_D = -8A$	38	55	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = -10V, I_D = -8A$	11		S
<b>DYNAMIC</b>					
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	833		pF
Output Capacitance	$C_{oss}$		198		
Reverse Transfer Capacitance	$C_{rss}$		138		
Total Gate Charge <sup>2</sup>	$Q_g$	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = -10V, I_D = -8A$	18		nC
Gate-Source Charge <sup>2</sup>	$Q_{gs}$		3.3		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$		6.8		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	$V_{DS} = -20V, I_D \cong -1A, V_{GS} = -10V, R_{GS} = 6\Omega$	6.7	13.4	nS
Rise Time <sup>2</sup>	$t_r$		9.7	19.4	
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$		19.8	35.6	
Fall Time <sup>2</sup>	$t_f$		12.3	22.2	
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>					
Continuous Current	$I_S$			-21	A
Pulsed Current <sup>3</sup>	$I_{SM}$			-39	
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = -8A, V_{GS} = 0V$		-1	V
Reverse Recovery Time	$t_{rr}$	$I_F = -8A, di_F/dt = 100A / \mu S$	17		nS
Reverse Recovery Charge	$Q_{rr}$		9		nC

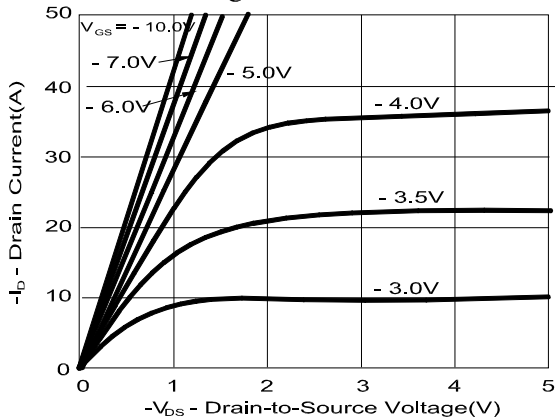
<sup>1</sup>Pulse test : Pulse Width  $\leq 300 \mu sec$ , Duty Cycle  $\leq 2\%$ .

<sup>2</sup>Independent of operating temperature.

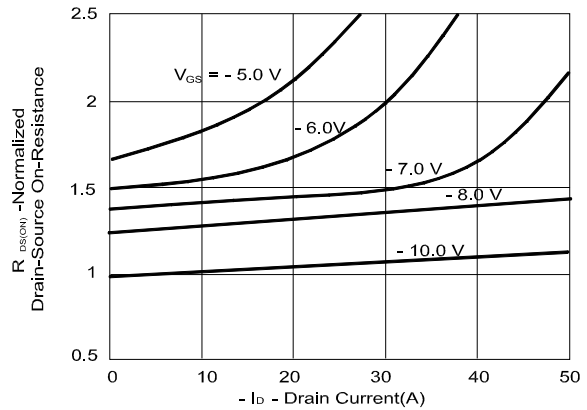
<sup>3</sup>Pulse width limited by maximum junction temperature.

**TYPICAL PERFORMANCE CHARACTERISTICS**

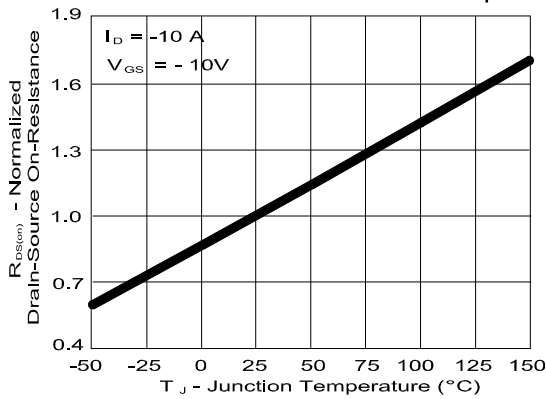
**On-Region Characteristics**



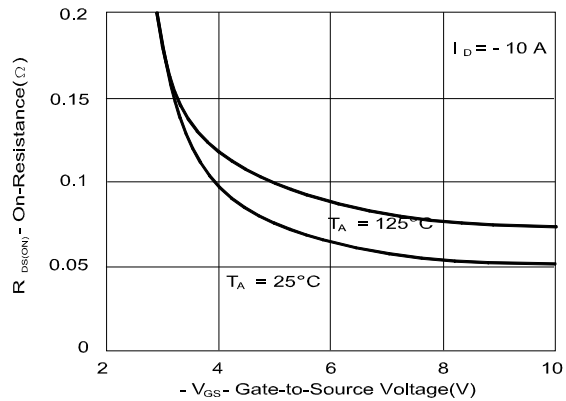
**On-Resistance Variation with Drain Current and Gate Voltage**



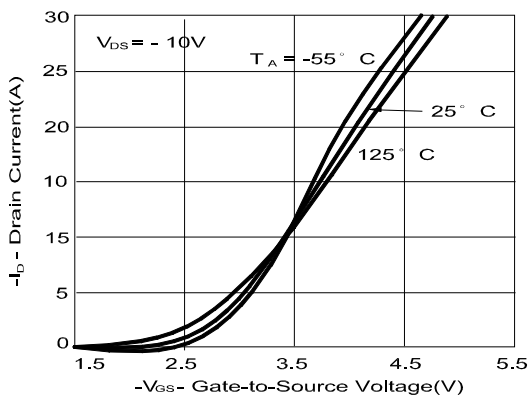
**On-Resistance Variation with Temperature**



**On-Resistance Variation with Gate-to-Source Voltage**



**Transfer Characteristics**



**Body Diode Forward Voltage Variation with Source Current and Temperature**

