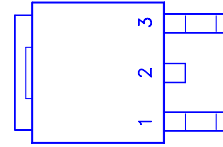
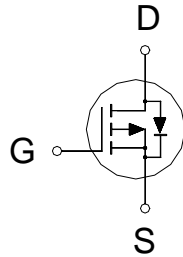


**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-40V	55m	-8A



1. GATE
2. DRAIN
3. SOURCE

**ABSOLUTE MAXIMUM RATINGS ( $T_C = 25\text{ }^\circ\text{C}$  Unless Otherwise Noted)**

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	-40	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	$I_D$	-8	A
	$T_C = 70\text{ }^\circ\text{C}$		-6	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	-32	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	$P_D$	28	W
	$T_C = 70\text{ }^\circ\text{C}$		18	
Operating Junction & Storage Temperature Range		$T_j, T_{stg}$	-55 to 150	$^\circ\text{C}$
Lead Temperature ( <sup>1</sup> / <sub>16</sub> " from case for 10 sec.)		$T_L$	275	

**THERMAL RESISTANCE RATINGS**

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

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

<sup>2</sup>Duty cycle  $\leq 1\%$

**ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ , Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu\text{A}$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1	-1.5	-2.5	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 250$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -32V, V_{GS} = 0V$			1	$\mu\text{A}$
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 125\text{ }^\circ\text{C}$			10	
On-State Drain Current <sup>1</sup>	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	-32			A

Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -6A$	65	94	m
		$V_{GS} = -10V, I_D = -8A$	38	55	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = -10V, I_D = -8A$	11		S
<b>DYNAMIC</b>					
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	690		pF
Output Capacitance	$C_{oss}$		310		
Reverse Transfer Capacitance	$C_{rss}$		75		
Total Gate Charge <sup>2</sup>	$Q_g$	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = -10V, I_D = -8A$	14		nC
Gate-Source Charge <sup>2</sup>	$Q_{gs}$		2.2		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$		1.9		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	$V_{DS} = -20V, R_L = 1$ $I_D \cong -1A, V_{GS} = -10V, R_{GS} = 6$	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>C</sub> = 25 °C)</b>					
Continuous Current	$I_S$			-1.3	A
Pulsed Current <sup>3</sup>	$I_{SM}$			-2.6	
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = I_S, V_{GS} = 0V$		-1	V
Reverse Recovery Time	$t_{rr}$	$I_F = -5 A, di_F/dt = 100A / \mu S$	15.5		nS
Reverse Recovery Charge	$Q_{rr}$		7.9		nC

<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

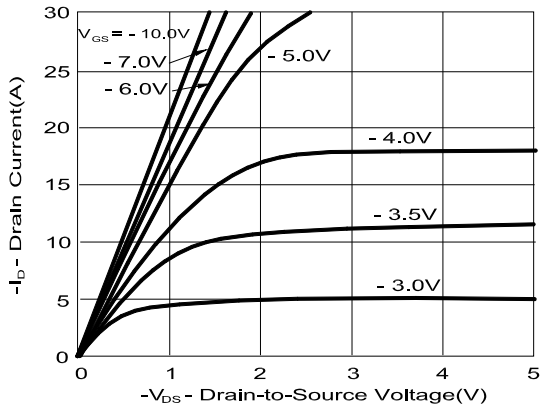
<sup>3</sup>Pulse width limited by maximum junction temperature.

**REMARK: THE PRODUCT MARKED WITH “P5504EDG”, DATE CODE or LOT #**

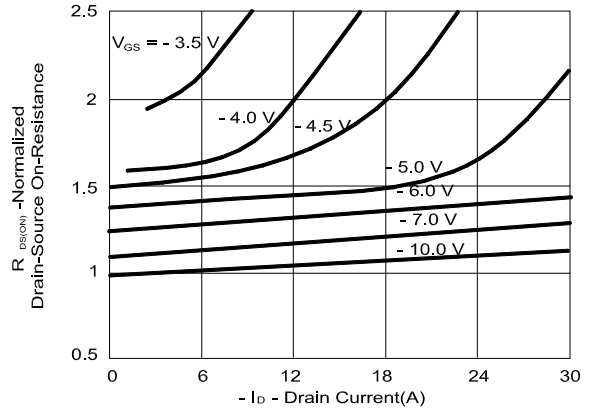
**Orders for parts with Lead-Free plating can be placed using the PXXXXXXG parts name.**

**TYPICAL PERFORMANCE CHARACTERISTICS**

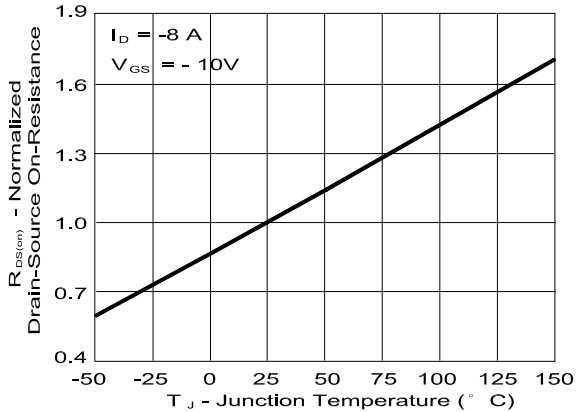
**On-Region Characteristics**



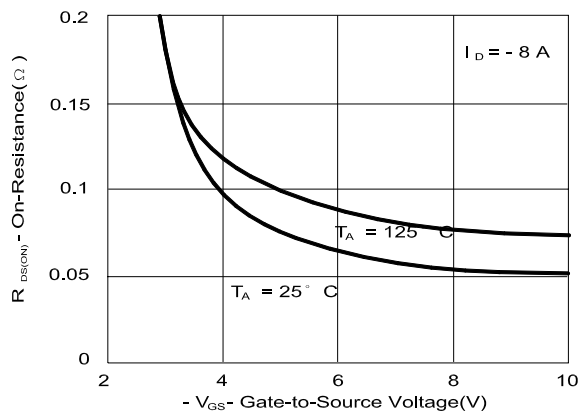
**On-Resistance Variation with Drain Current and Gate Voltage**



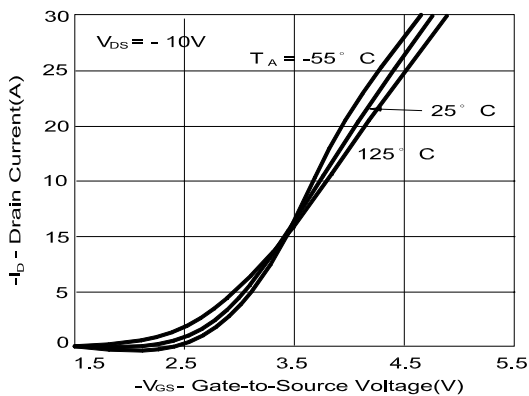
**On-Resistance Variation with Temperature**



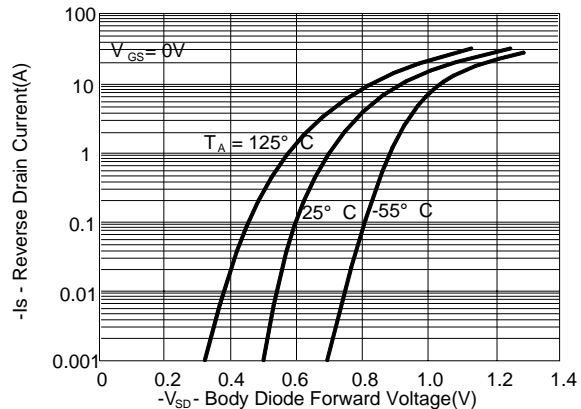
**On-Resistance Variation with Gate-to-Source Voltage**

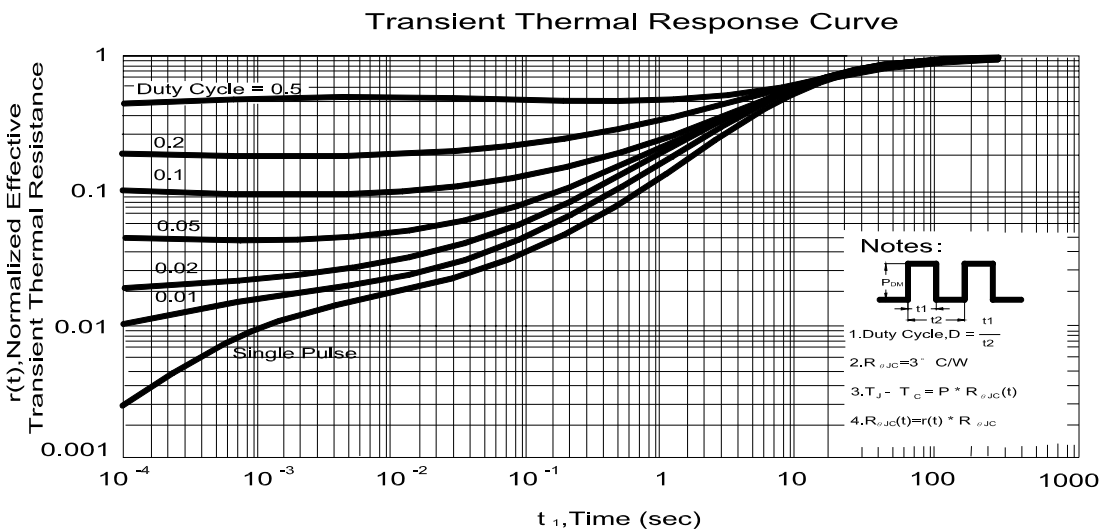
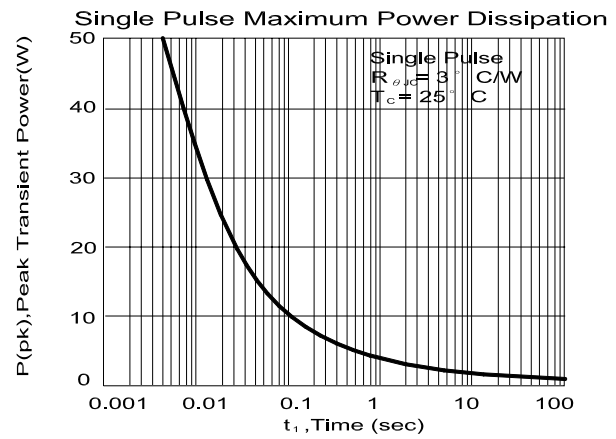
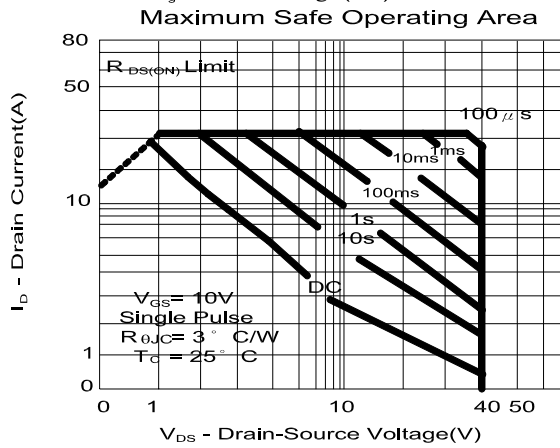
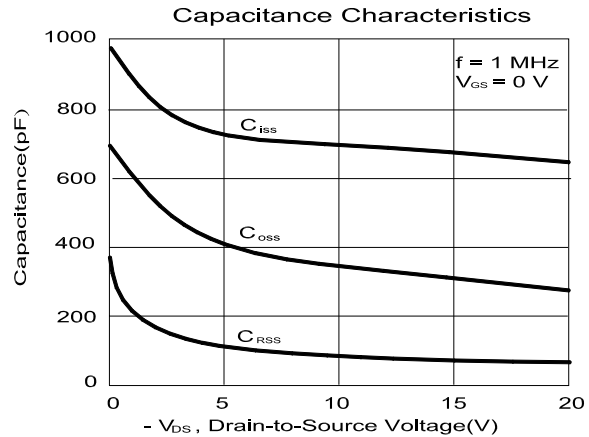
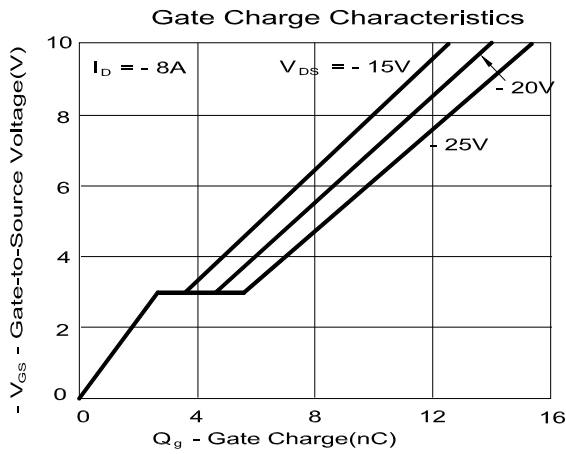


**Transfer Characteristics**



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





**TO-252 (DPAK) MECHANICAL DATA**

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.35		10.4	H	0.89		2.03
B	2.2		2.4	I	6.35		6.80
C	0.45		0.6	J	5.2		5.5
D	0.89		1.5	K	0.6		1
E	0.45		0.69	L	0.5		0.9
F	0.03		0.23	M	3.96	4.57	5.18
G	5.2		6.2	N			

