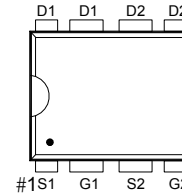
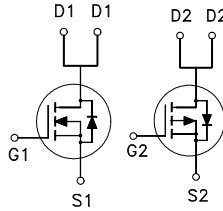


**PRODUCT SUMMARY**

	$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
N-Channel	30	25mΩ	7A
P-Channel	-30	45mΩ	-5A



G : GATE  
D : DRAIN  
S : SOURCE

**100% Rg tested**  
**100% UIS tested**

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

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channel	UNITS
Drain-Source Voltage		$V_{DS}$	30	-30	V
Gate-Source Voltage		$V_{GS}$	±20	±20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	$I_D$	7	-5	A
	$T_C = 70\text{ }^\circ\text{C}$		6	-4	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	20	-20	
Avalanche Current		$I_{AS}$	18	-18	
Avalanche Energy	L = 0.1mH	$E_{AS}$	19		mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	$P_D$	2.5		W
	$T_C = 70\text{ }^\circ\text{C}$		1.6		
Junction & Storage Temperature Range		$T_j, T_{stg}$	-55 to 150		°C

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		50	°C / W

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

<sup>2</sup>Duty cycle ≤ 1%

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
<b>STATIC</b>							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	N-Ch	30		V	
		$V_{GS} = 0V, I_D = -250\mu A$	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	N-Ch	1	1.5		2.5
		$V_{DS} = V_{GS}, I_D = -250\mu A$	P-Ch	-1	-1.5		-2.5

Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$	N-Ch			$\pm 100$	nA
		$V_{DS} = 0V, V_{GS} = \pm 20V$	P-Ch			$\pm 100$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$	N-Ch			1	$\mu A$
		$V_{DS} = -24V, V_{GS} = 0V$	P-Ch			-1	
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$	N-Ch			10	
		$V_{DS} = -20V, V_{GS} = 0V, T_J = 55^\circ C$	P-Ch			-10	
On-State Drain Current <sup>1</sup>	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	N-Ch	20			A
		$V_{DS} = -5V, V_{GS} = -10V$	P-Ch	-20			
Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	N-Ch		25	37	m $\Omega$
		$V_{GS} = -4.5V, I_D = -4A$	P-Ch		58	80	
		$V_{GS} = 10V, I_D = 7A$	N-Ch		18	25	
		$V_{GS} = -10V, I_D = -5A$	P-Ch		34	45	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 7A$	N-Ch		19		S
		$V_{DS} = -5V, I_D = -5A$	P-Ch		11		

**DYNAMIC**

Input Capacitance	$C_{iss}$	N-Channel	N-Ch		790		pF
			P-Ch		690		
Output Capacitance	$C_{oss}$	$V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$	N-Ch		175		
			P-Ch		310		
Reverse Transfer Capacitance	$C_{rss}$	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$	N-Ch		65		
			P-Ch		75		
Gate Resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	N-Ch		2		$\Omega$
			P-Ch		6.25		

Total Gate Charge <sup>2</sup>	$Q_g$	N-Channel $V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = 10V,$	N-Ch		16		
			P-Ch		14		
Gate-Source Charge <sup>2</sup>	$Q_{gs}$	$I_D = 7A$	N-Ch		2.5		nC
		P-Channel	P-Ch		2.2		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$	$V_{DS} = 0.5V_{(BR)DSS}, V_{GS} = -10V,$	N-Ch		2.1		
		$I_D = -5A$	P-Ch		1.9		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	N-Channel	N-Ch		2.2	4.4	nS
			P-Ch		6.7	13.4	
Rise Time <sup>2</sup>	$t_r$	$V_{DD} = 10V$	N-Ch		7.5	15	
		$I_D \cong 1A, V_{GS} = 10V, R_{GEN} = 6\Omega$	P-Ch		9.7	19.4	
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$	P-Channel	N-Ch		11.8	21.3	
			P-Ch		19.8	35.6	
Fall Time <sup>2</sup>	$t_f$	$V_{DD} = -10V$	N-Ch		3.7	7.4	
		$I_D \cong -1A, V_{GS} = -10V, R_{GEN} = 6\Omega$	P-Ch		12.3	22.2	
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>							
Continuous Current	$I_S$		N-Ch			1.3	A
			P-Ch			-1.3	
Pulsed Current <sup>3</sup>	$I_{SM}$		N-Ch			2.6	A
			P-Ch			-2.6	
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = 7A, V_{GS} = 0V$	N-Ch			1	V
		$I_F = -5A, V_{GS} = 0V$	P-Ch			-1	

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

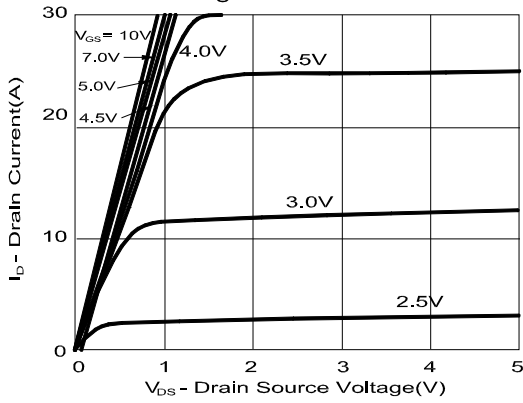
<sup>2</sup>Independent of operating temperature.

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

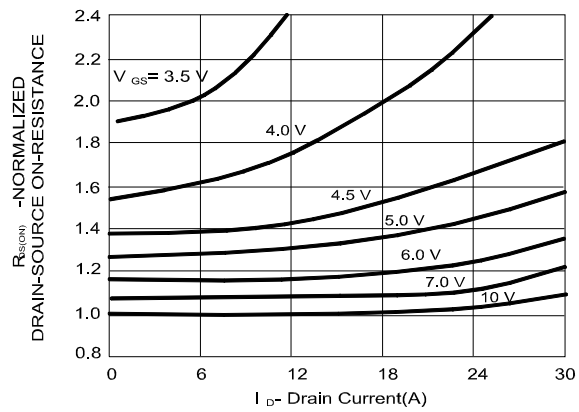
**REMARK: THE PRODUCT MARKED WITH "P2503NPG", DATE CODE or LOT #**

**N-CHANNEL**

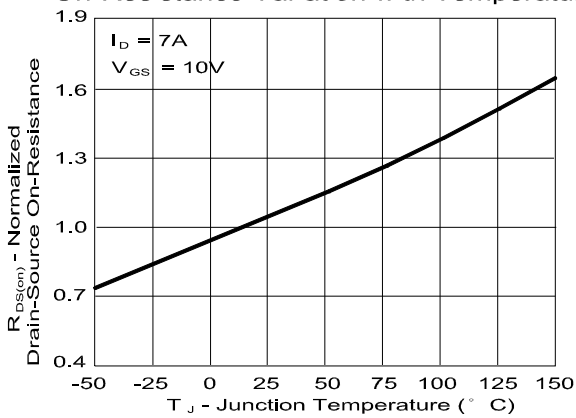
On-Region Characteristics



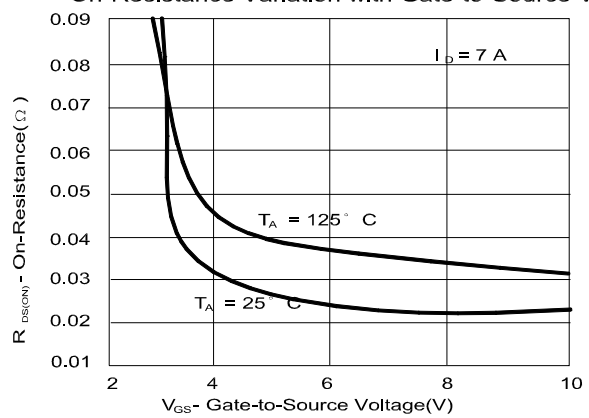
On-Resistance Variation with Drain Current and Gate Voltage



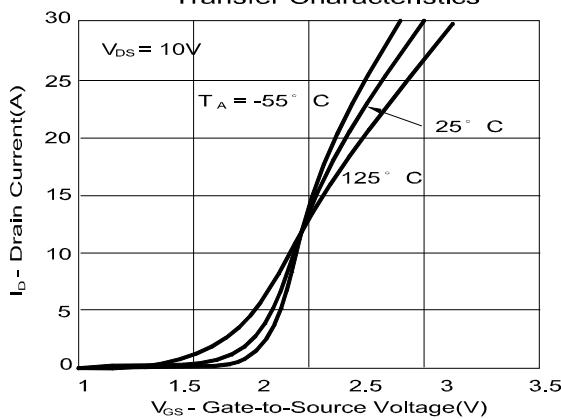
On-Resistance Variation with Temperature



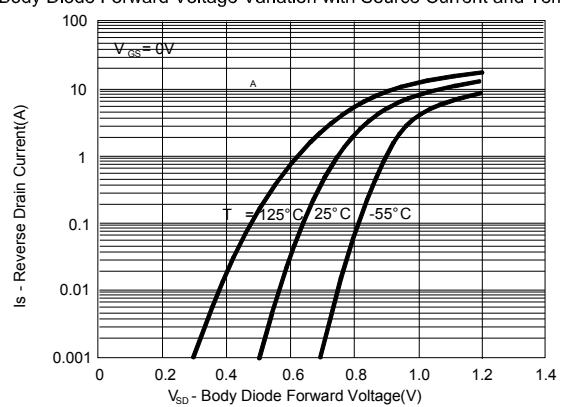
On-Resistance Variation with Gate-to-Source Voltage

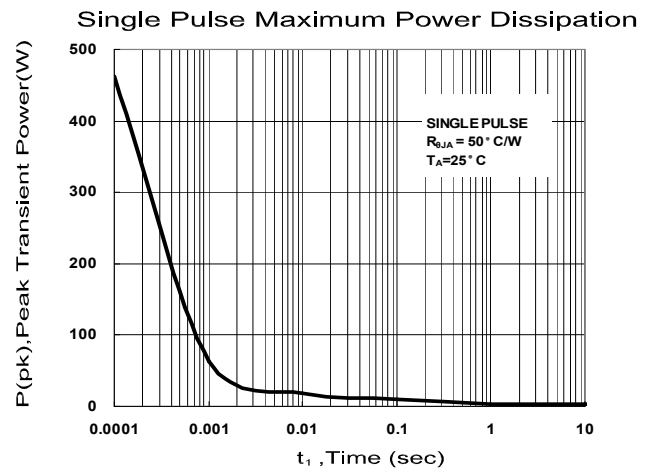
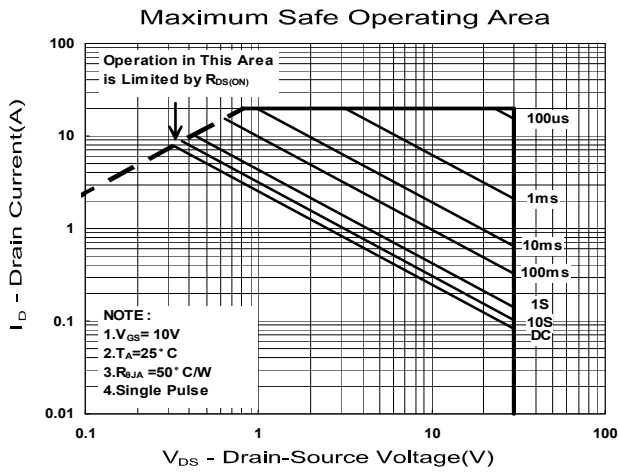
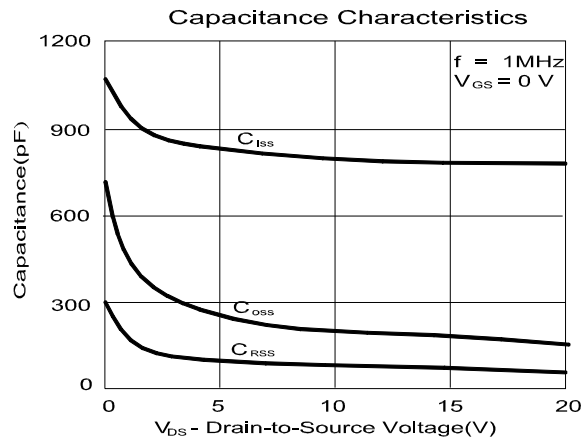
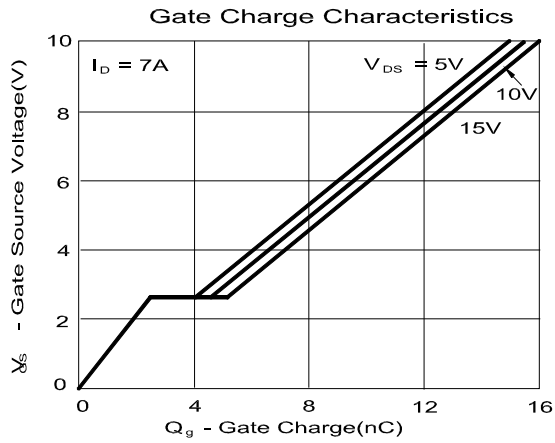


Transfer Characteristics



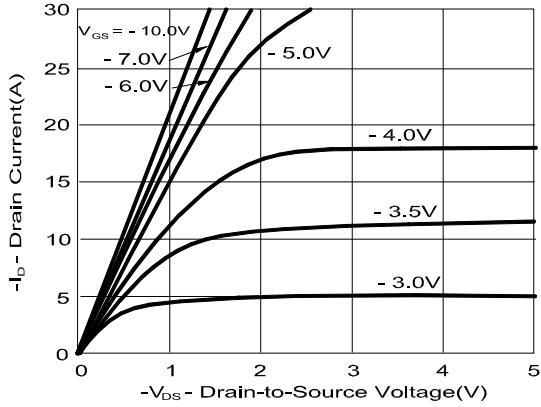
Body Diode Forward Voltage Variation with Source Current and Temperature



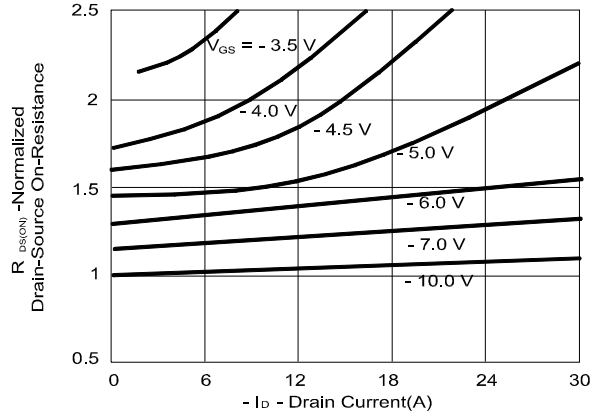


**P-CHANNEL**

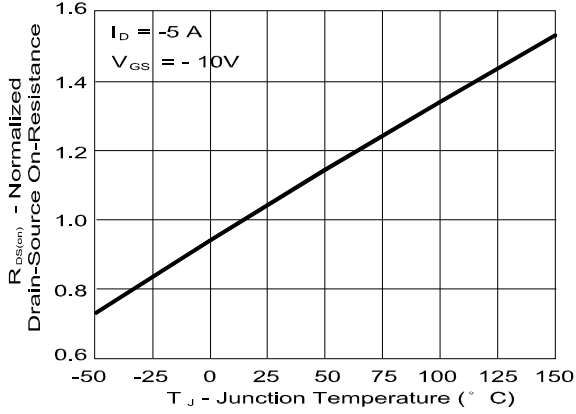
On-Region Characteristics



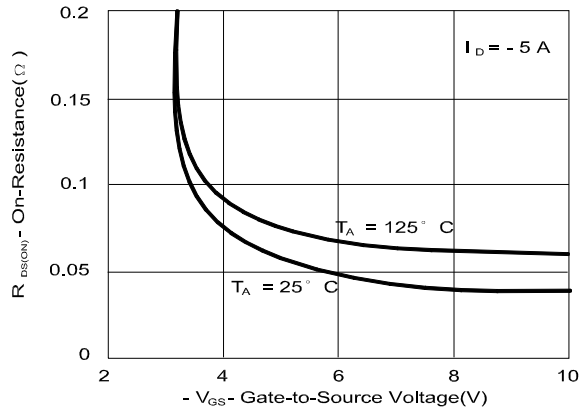
On-Resistance Variation with Drain Current and Gate Voltage



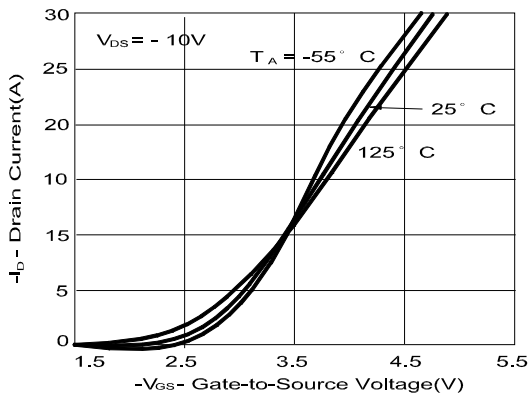
On-Resistance Variation with Temperature



On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics



Body Diode Forward Voltage Variation with Source Current and Temperature

