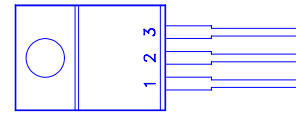
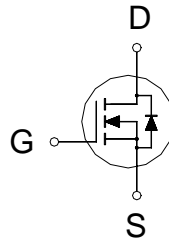


**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
25	9.5m	50A



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
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	$I_D$	50	A
	$T_C = 100\text{ }^\circ\text{C}$		35	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	200	
Avalanche Current		$I_{AR}$	40	mJ
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	250	
Repetitive Avalanche Energy <sup>2</sup>	$L = 0.05\text{mH}$	$E_{AR}$	8.6	
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	$P_D$	65	W
	$T_C = 100\text{ }^\circ\text{C}$		33	
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	$R_{\theta JA}$		70	
Case-to-Heatsink	$R_{\theta CS}$	0.7		

<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	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	25			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.6	3	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			$\pm 250$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$			25	$\mu\text{A}$
		$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, T_C = 125\text{ }^\circ\text{C}$			250	
On-State Drain Current <sup>1</sup>	$I_{D(ON)}$	$V_{DS} = 10\text{V}, V_{GS} = 10\text{V}$	50			A

Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 20A$		11	16	m
		$V_{GS} = 10V, I_D = 25A$		7.5	9.5	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 10V, I_D = 25A$		32		S
<b>DYNAMIC</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		1200	1800	pF
Output Capacitance	$C_{oss}$			600	1000	
Reverse Transfer Capacitance	$C_{rss}$			350	500	
Total Gate Charge <sup>2</sup>	$Q_g$	$V_{DS} = 10V, V_{GS} = 10V, I_D = 25A$		25	50	nC
Gate-Source Charge <sup>2</sup>	$Q_{gs}$			15		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$			10		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	$V_{DS} = 15V, R_L = 1$ $I_D \cong 50A, V_{GS} = 10V, R_{GEN} = 24$		6	16	nS
Rise Time <sup>2</sup>	$t_r$			120	250	
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$			40	90	
Fall Time <sup>2</sup>	$t_f$			105	200	
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>c</sub> = 25 °C)</b>						
Continuous Current	$I_S$				50	A
Pulsed Current <sup>3</sup>	$I_{SM}$				150	
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_S = 25A, V_{GS} = 0V$		0.9	1.3	V
Reverse Recovery Time	$t_{rr}$	$I_F = I_S, di_F/dt = 100A / \mu S$		70		nS
Peak Reverse Recovery Current	$I_{RM(REC)}$			200		A
Reverse Recovery Charge	$Q_{rr}$			0.043		$\mu C$

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

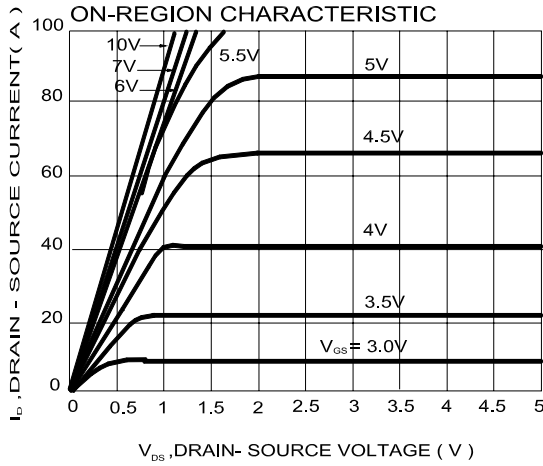
<sup>2</sup>Independent of operating temperature.

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

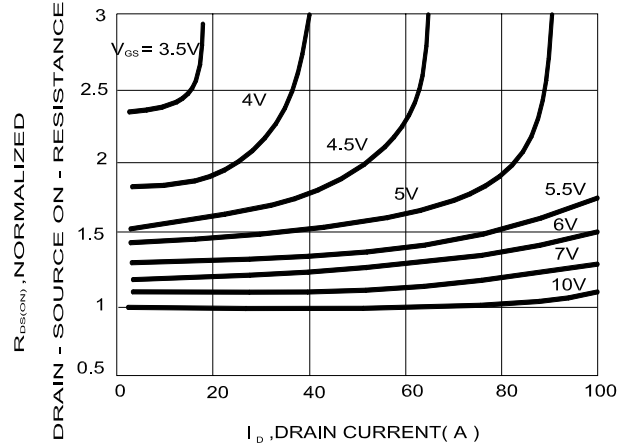
**REMARK: THE PRODUCT MARKED WITH “P0903BTG”, DATE CODE or LOT #**

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

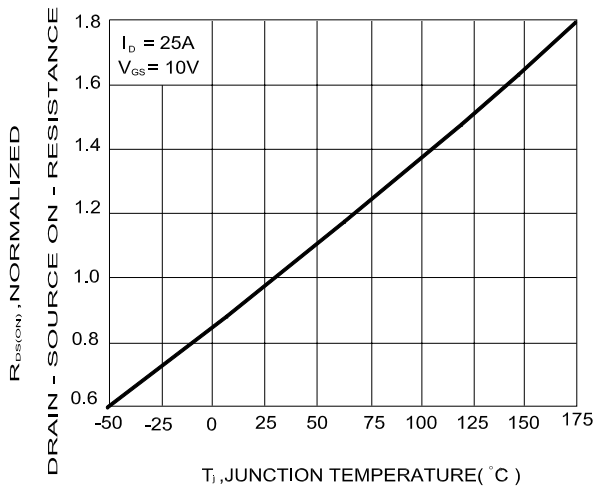
**TYPICAL CHARACTERISTICS**



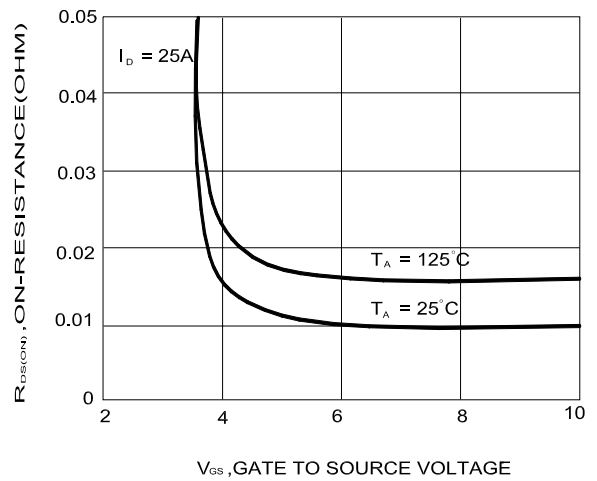
ON-RESISTANCE VARIATION WITH DRAIN CURRENT AND GATE



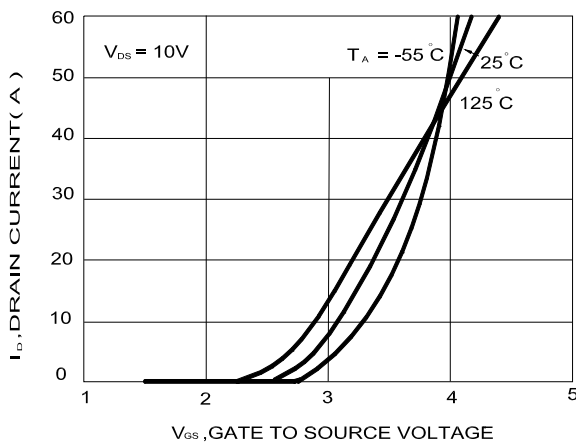
ON-RESISTANCE VARIATION WITH TEMPERATURE



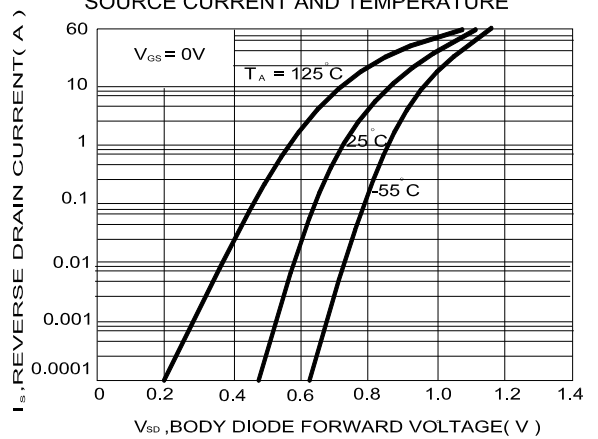
ON-RESISTANCE VARIATION WITH GATE-TO-SOYRCE VOLTAGE

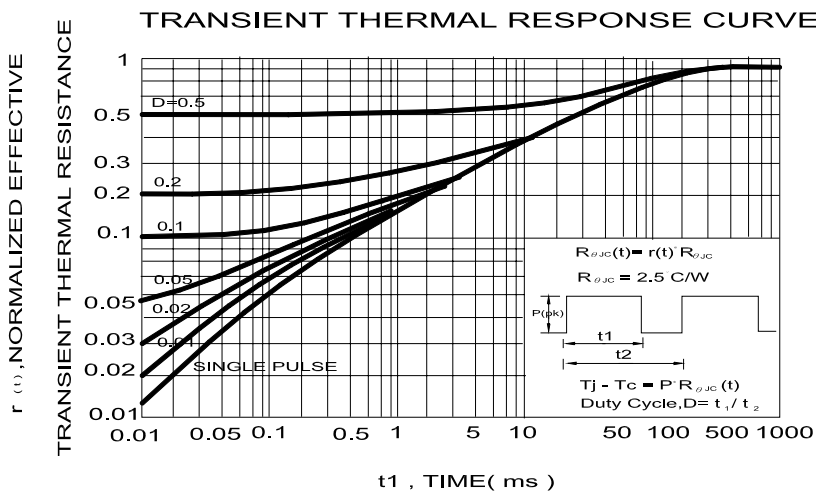
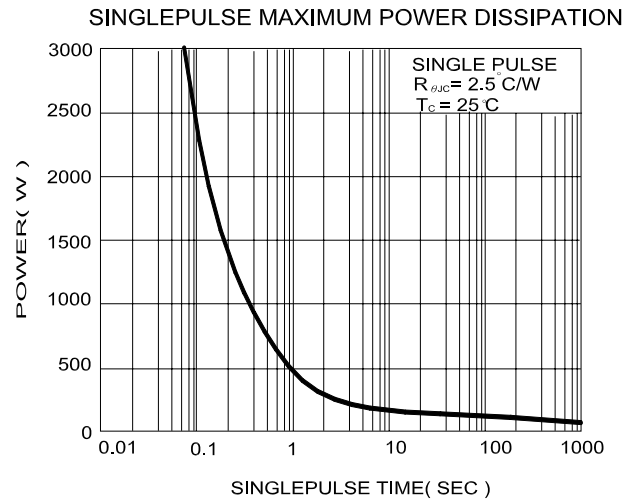
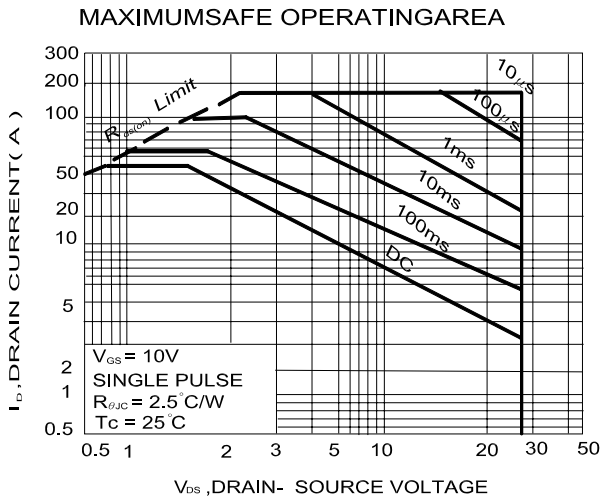
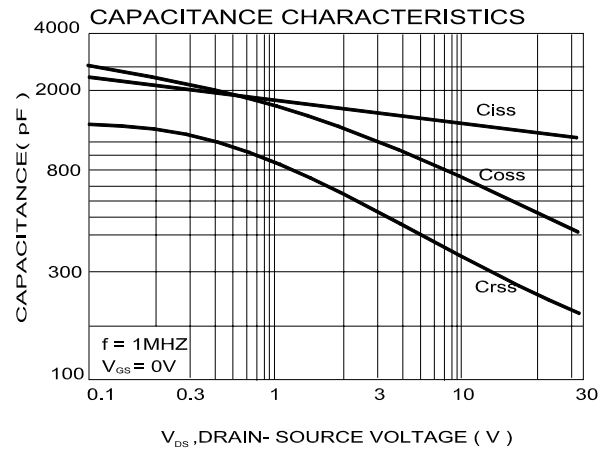
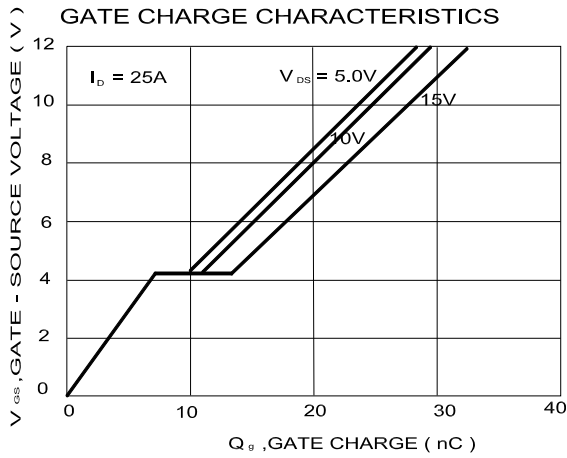


TRANSFER CHARACTERISTICS



BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE





**TO-220 (3-Lead) MECHANICAL DATA**

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.78	10.16	10.54	H	2.4	2.54	2.68
B	2.61	2.74	2.87	I	1.19	1.27	1.35
C		20		J	4.4	4.6	4.8
D	28.5	28.9	29.3	K	1.14	1.27	1.4
E	14.6	15.0	15.4	L	2.3	2.6	2.9
F	8.4	8.8	9.2	M	0.26	0.46	0.66
G	0.72	0.8	0.88	N		7°	

