



# PJ06N03D

## 25V N-Channel Enhancement Mode MOSFET

### FEATURES

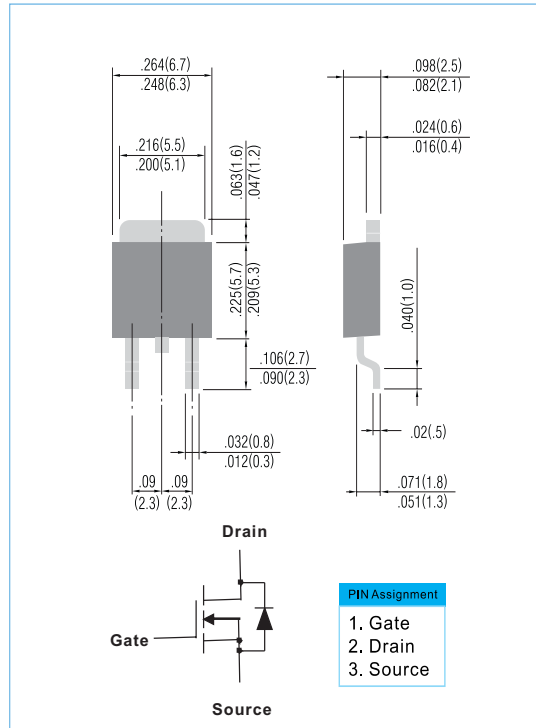
- $R_{DS(ON)}$ ,  $V_{GS}$  @ 10V,  $I_{DS}$  @ 30A=6m $\Omega$
- $R_{DS(ON)}$ ,  $V_{GS}$  @ 4.5V,  $I_{DS}$  @ 30A=9m $\Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for DC/DC Converters and Motor Drivers
- Fully Characterized Avalanche Voltage and Current
- Pb free product : 99% Sn above can meet RoHS environment substance directive request

### MECHANICAL DATA

- Case: TO-252 Molded Plastic
- Terminals : Solderable per MIL-STD-750D, Method 1036.3
- Marking : 06N03D

DPAK / TO-252

Unit: inch ( mm )



### Maximum RATINGS and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted )

PARAMETER	Symbol	Limit	Units
Drain-Source Voltage	$V_{DS}$	25	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	60	A
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	320	A
Maximum Power Dissipation	$P_D$	70 42	W
		$T_A=25^\circ\text{C}$ $T_A=75^\circ\text{C}$	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to + 150	$^\circ\text{C}$
Avalanche Energy with Single Pulse $I_D=40\text{A}, V_{DD}=25\text{V}, L=0.5\text{mH}$	$E_{AS}$	400	mJ
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
Junction-to Ambient Thermal Resistance(PCB mounted) <sup>2)</sup>	$R_{\theta JA}$	50	$^\circ\text{C/W}$

- Note: 1. Maximum DC current limited by the package  
2. Surface mounted on FR4 board,  $t \leq 10$  sec

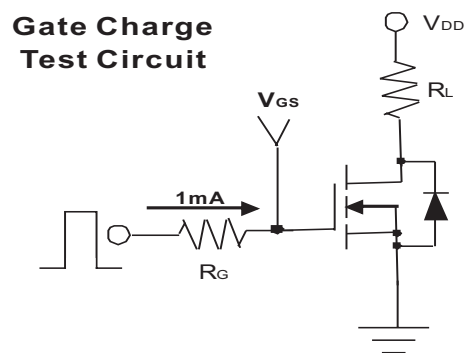
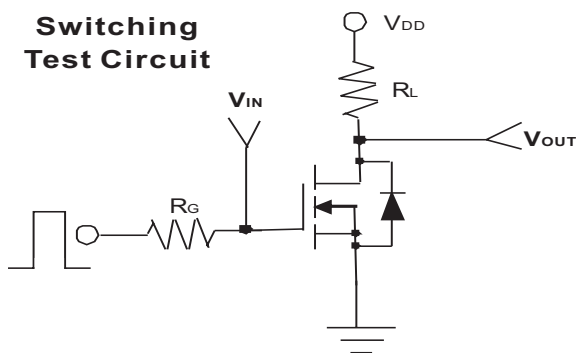
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## ELECTRICAL CHARACTERISTICS

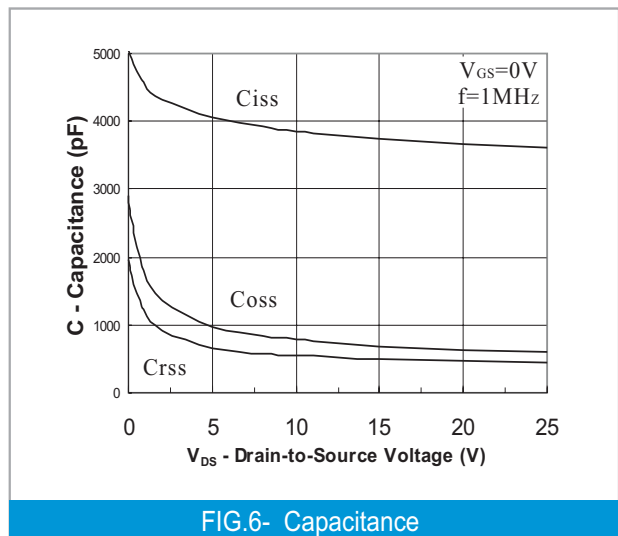
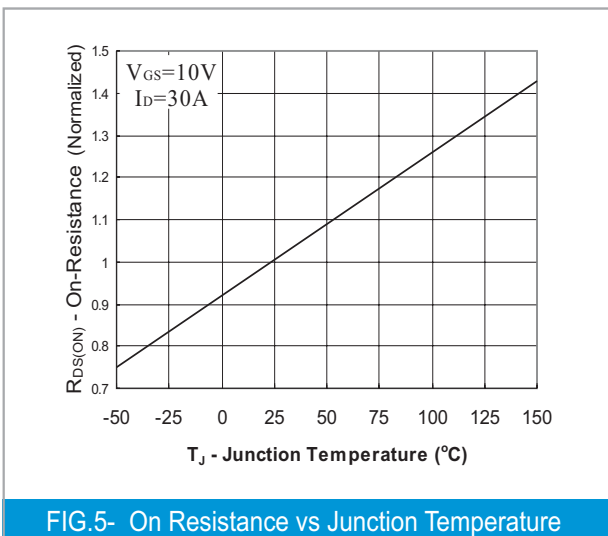
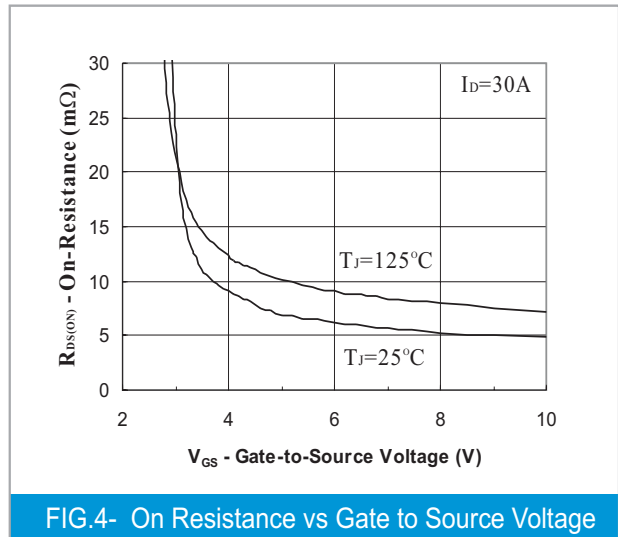
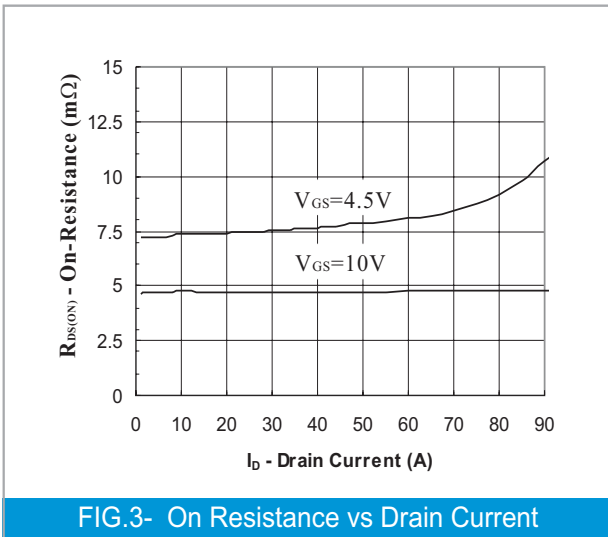
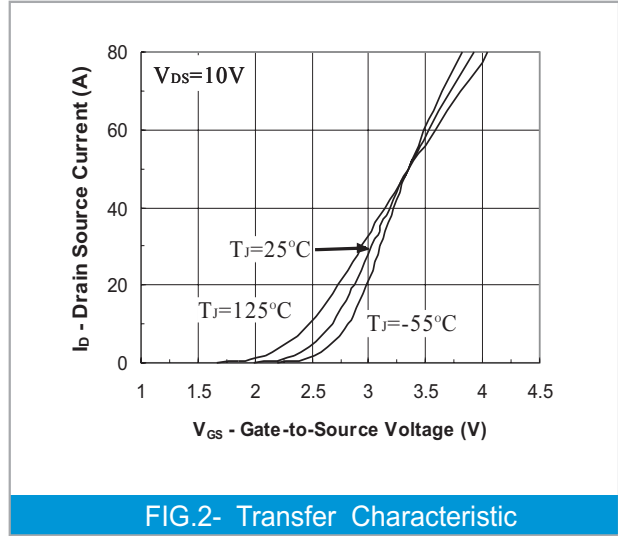
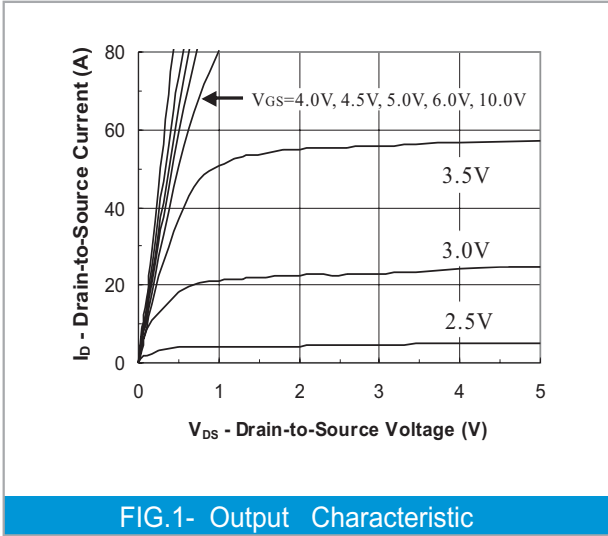
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	25	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=30A$	-	7.6	9.0	m $\Omega$
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	4.7	6.0	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=25V, V_{GS}=0V$	-	-	1	$\mu A$
Gate Body Leakage	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Forward Transconductance	$g_{fs}$	$V_{DS}=10V, I_D=15A$	30	-	-	S
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=15V, I_D=15A, V_{GS}=5V$	-	39	-	nC
			-	72	-	
			-	8.1	-	
Gate-Source Charge	$Q_{gs}$	$V_{DS}=15V, I_D=15A$ $V_{GS}=10V$	-	8.1	-	ns
Gate-Drain Charge	$Q_{gd}$		-	14.2	-	
Turn-On Delay Time	$T_{d(on)}$		-	17.2	21	
Turn-On Rise Time	$t_{rr}$	$V_{DD}=15V, R_L=15\Omega$ $I_b=1A, V_{GEN}=10V$ $R_G=3.6\Omega$	-	15	17	ns
Turn-Off Delay Time	$t_{d(off)}$		-	78	90	
Turn-Off Fall Time	$t_f$		-	30	42	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1.0MHz$	-	3750	-	pF
Output Capacitance	$C_{oss}$		-	650	-	
Reverse Transfer Capacitance	$C_{rss}$		-	500	-	
<b>Source-Drain Diode</b>						
Max. Diode Forward Current	$I_s$	-	-	-	65	A
Diode Forward Voltage	$V_{SD}$	$I_s=30A, V_{GS}=0V$	-	0.95	1.2	V





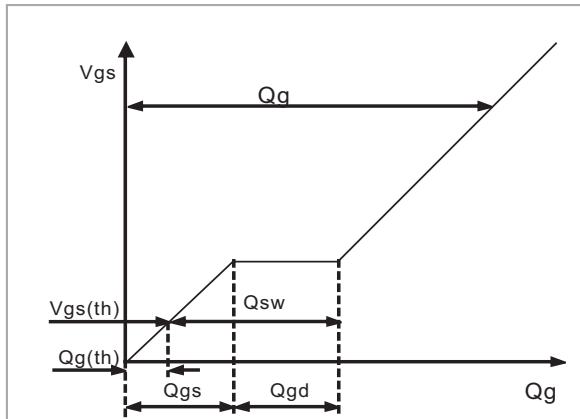
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Typical Characteristics Curves ( $T_J=25^\circ\text{C}$ , unless otherwise noted)

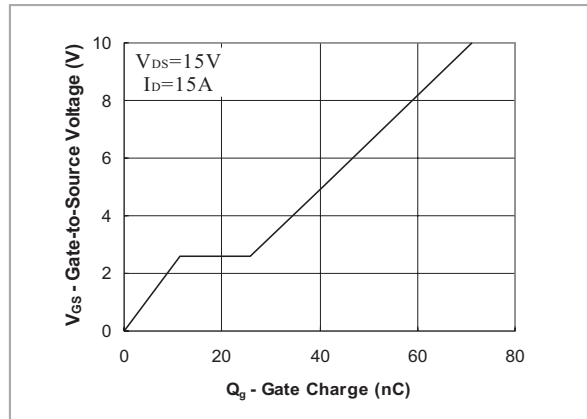




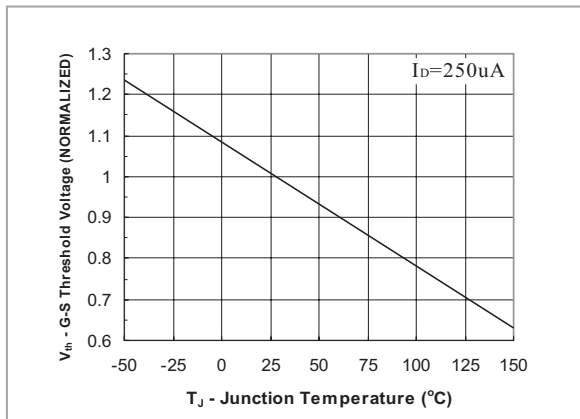
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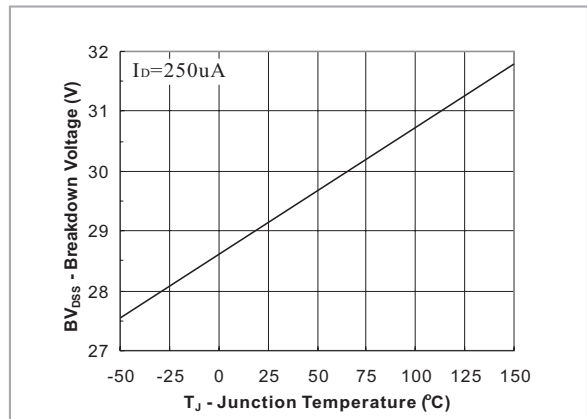
**Fig. 7 - Gate Charge Waveform**



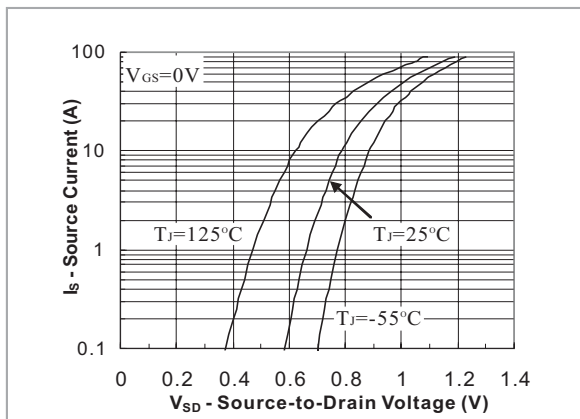
**Fig. 8 - Gate Charge**



**Fig. 9 - Threshold Voltage vs Temperature**



**Fig. 10 - Breakdown Voltage vs Junction Temperature**



**Fig. 11 - Source-Drain Diode Forward Voltage**

## LEGAL STATEMENT

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