



# PJM90N70TO

## N-Channel Enhancement Mode Power MOSFET

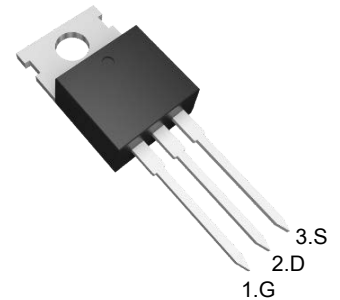
### Features

- Excellent package for good heat dissipation
- Fully characterized avalanche voltage and current
- High density cell design for ultra low  $R_{DS(on)}$
- $V_{DS} = 70V, I_D = 90A$   
 $R_{DS(on)} < 8m\Omega @ V_{GS} = 10V$

### Applications

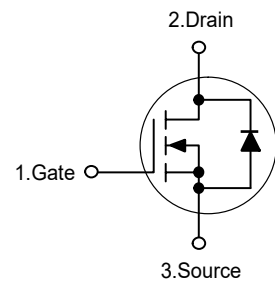
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

### TO-220



1.Gate 2.Drain 3.Source

### Schematic diagram



### Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	70	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous	$I_D$	90	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	310	A
Single pulse avalanche energy <sup>Note4</sup>	$E_{AS}$	450	mJ
Maximum Power Dissipation	$P_D$	160	W
Junction Temperature	$T_J$	175	°C
Storage Temperature Range	$T_{STG}$	-55 to +175	°C

### Thermal Characteristics

Maximum Junction-to-Case <sup>Note2</sup>	$R_{\theta JC}$	0.9	°C/W
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### Electrical Characteristics

(T<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	70	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =70V, V <sub>GS</sub> =0V	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
Gate Threshold Voltage <sup>Note3</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	2.0	2.9	4.0	V
Drain-Source On-Resistance <sup>Note3</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A	--	6.8	8	mΩ
Forward Transconductance <sup>Note3</sup>	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =45A	25	--	--	S
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	--	3400	--	pF
Output Capacitance	C <sub>oss</sub>		--	310	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	221	--	pF
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =2A V <sub>GS</sub> =10V, R <sub>G</sub> =2.5Ω	--	15	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	11	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	52	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	13	--	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =30A, V <sub>GS</sub> =10V	--	94	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	16	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	24	--	nC
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>Note3</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =90A	--	--	1.2	V
Diode Forward Current <sup>Note2</sup>	I <sub>S</sub>		--	--	90	A

Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse width ≤ 300μs, duty cycle ≤ 2%

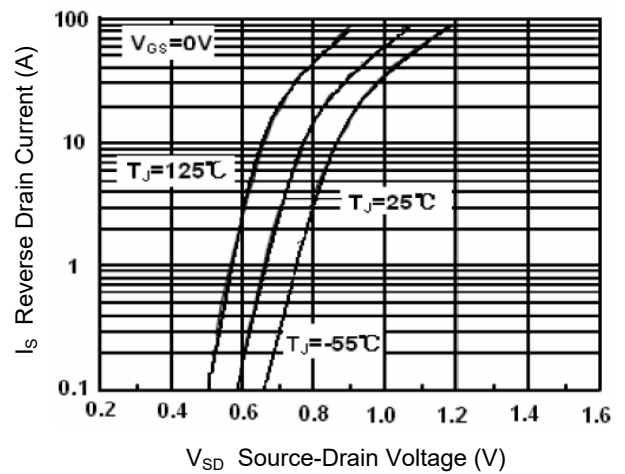
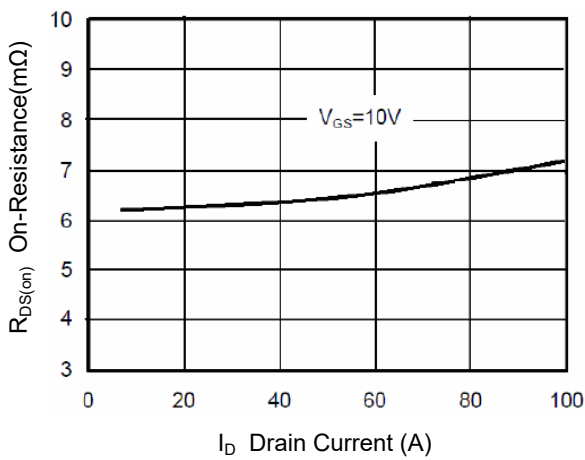
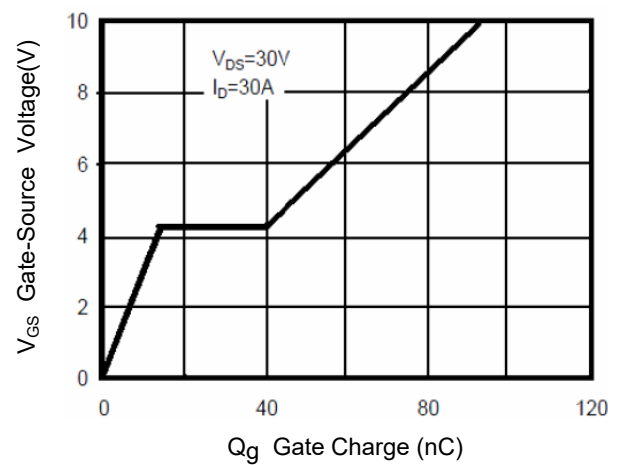
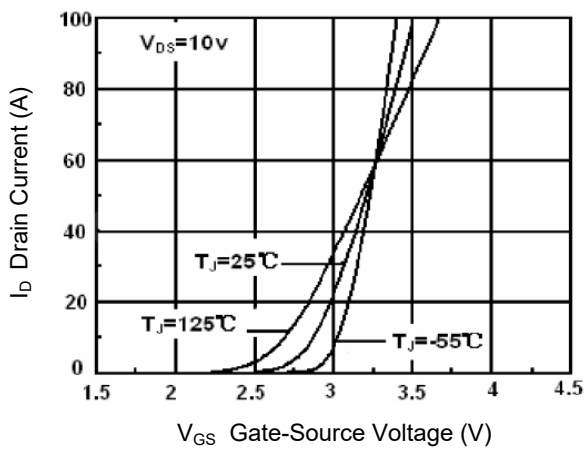
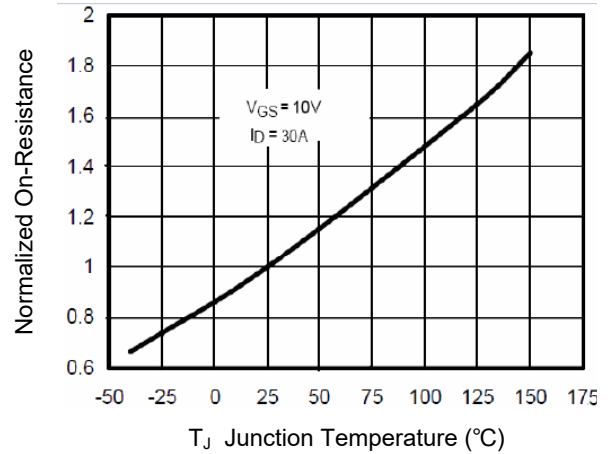
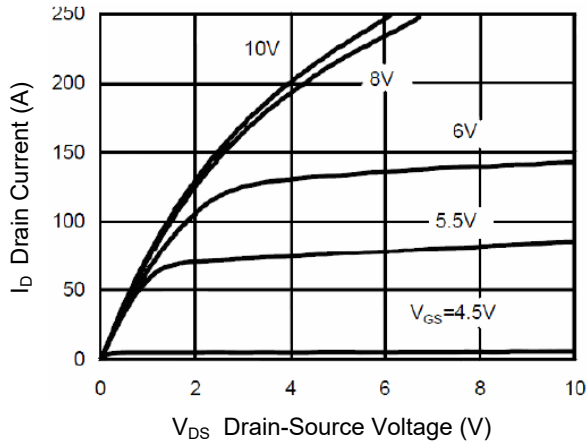
4. E<sub>AS</sub> Condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=35V, V<sub>GS</sub>=10V, L=0.5mH, R<sub>G</sub>=25Ω



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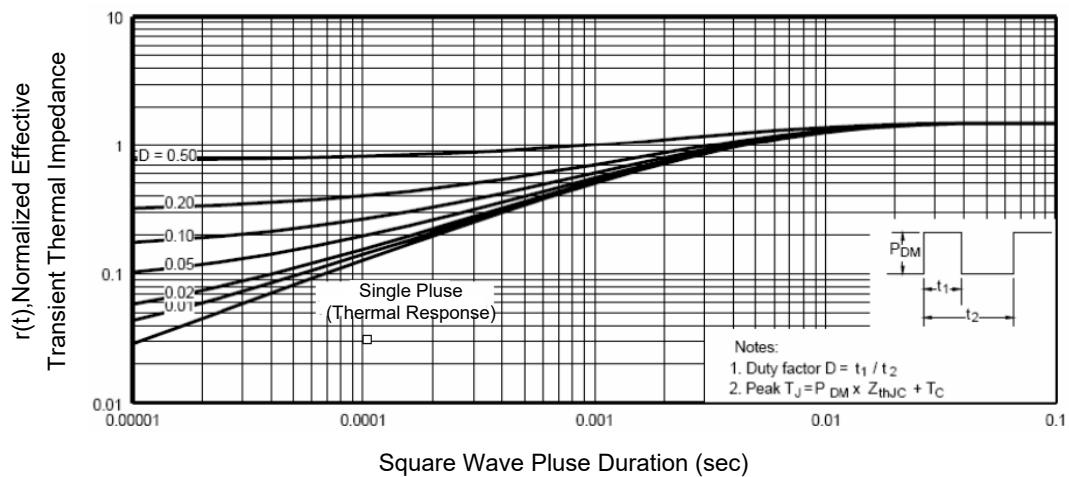
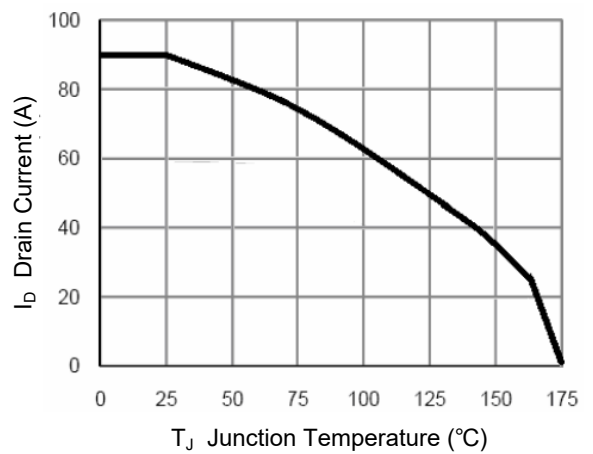
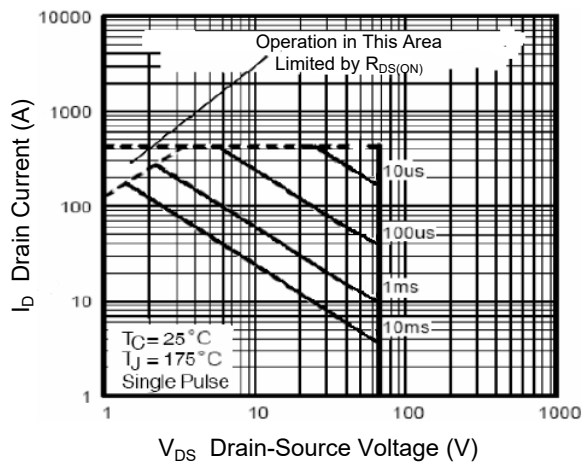
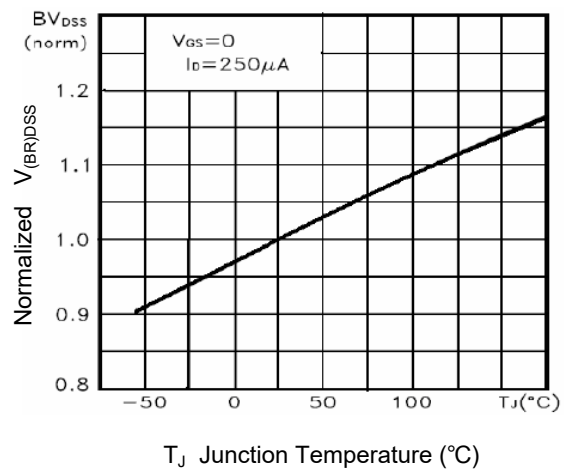
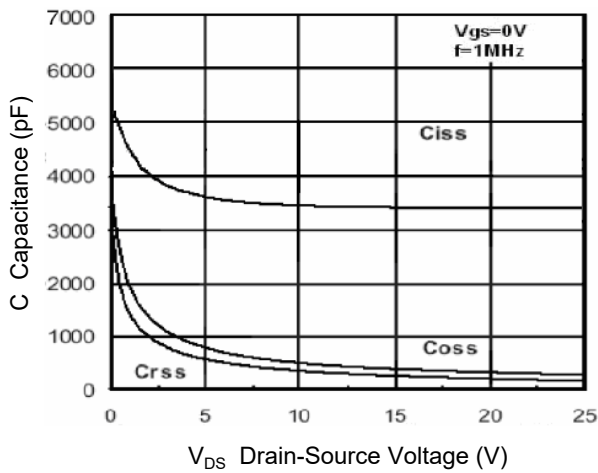
### Typical Characteristic Curves





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### Package Outline

TO-220

Dimensions in mm

