



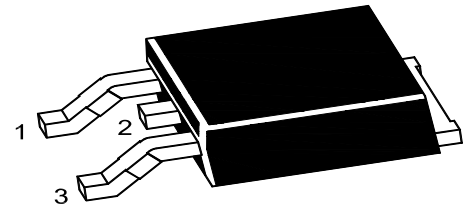
PJM90N20TE

N-Channel Enhancement Mode Power MOSFET

Features

- High density cell design for ultra low $R_{DS(on)}$
- Excellent package for good heat dissipation
- $V_{DS} = 20V, I_D = 90A$
 $R_{DS(on)} < 4.0m\Omega @ V_{GS} = 10V$

TO-252

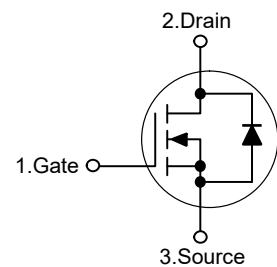


1. Gate 2.Drain 3.Source

Applications

- Power switching application
- Hard switched and high frequency circuits

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	90	A
Drain Current-Pulsed ^{Note1}	I_{DM}	360	A
Single pulse avalanche energy ^{Note4}	E_{AS}	250	mJ
Maximum Power Dissipation	P_D	90	W
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Maximum Junction-to-Case ^{Note2}	$R_{\theta JC}$	1.67	°C/W
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Electrical Characteristics

(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	--	--	± 0.1	μA
Gate Threshold Voltage ^{Note3}	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	1.5	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=10V, I_D=45A$	--	2.6	4.0	m Ω
		$V_{GS}=4.5V, I_D=30A$	--	2.8	4.0	m Ω
		$V_{GS}=2.5V, I_D=10A$	--	--	5.5	m Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=5V, I_D=45A$	22	--	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$	--	2800	--	pF
Output Capacitance	C_{oss}		--	510	--	pF
Reverse Transfer Capacitance	C_{rss}		--	265	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=45A,$ $V_{GS}=5V, R_G=1.8\Omega$	--	9	--	nS
Turn-on Rise Time	t_r		--	24	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	37	--	nS
Turn-off Fall Time	t_f		--	23	--	nS
Total Gate Charge	Q_g	$V_{DD}=10V, I_D=45A, V_{GS}=10V$	--	32	--	nC
Gate-Source Charge	Q_{gs}		--	9	--	nC
Gate-Drain Charge	Q_{gd}		--	11	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V_{SD}	$V_{GS}=0V, I_S=90A$	--	--	1.5	V
Diode Forward Current ^{Note2}	I_S		--	--	90	A

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

2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

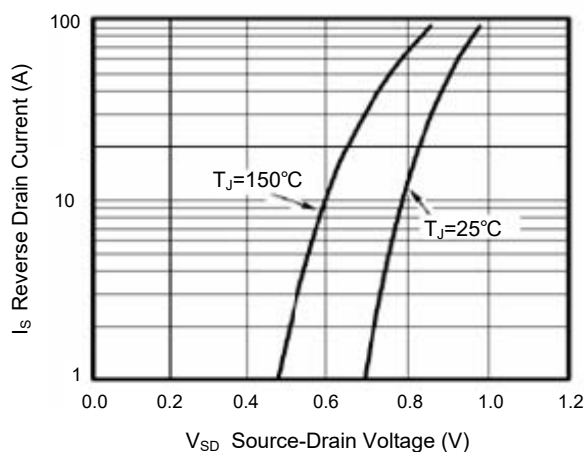
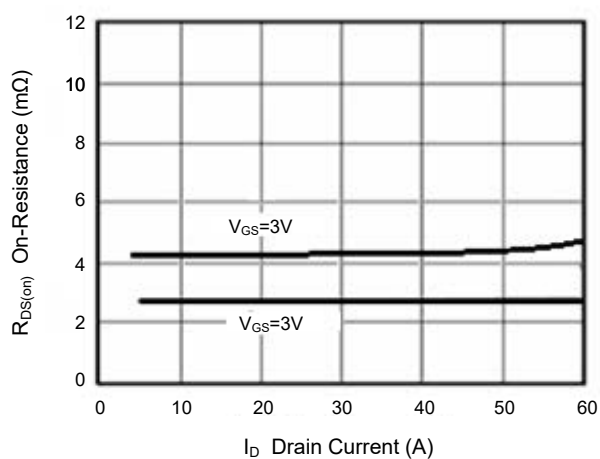
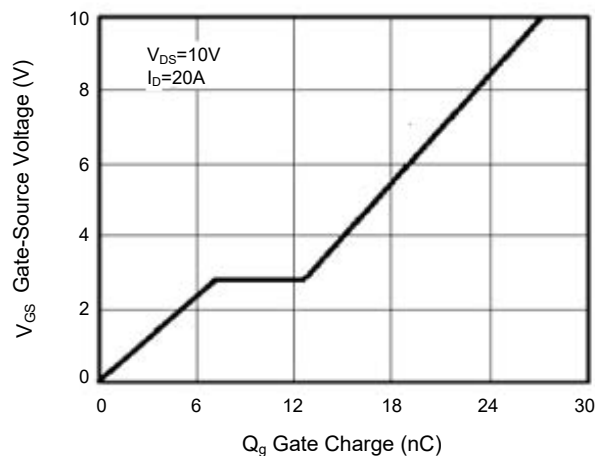
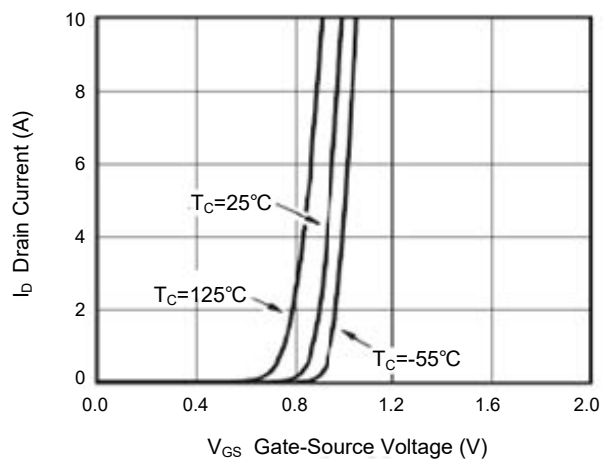
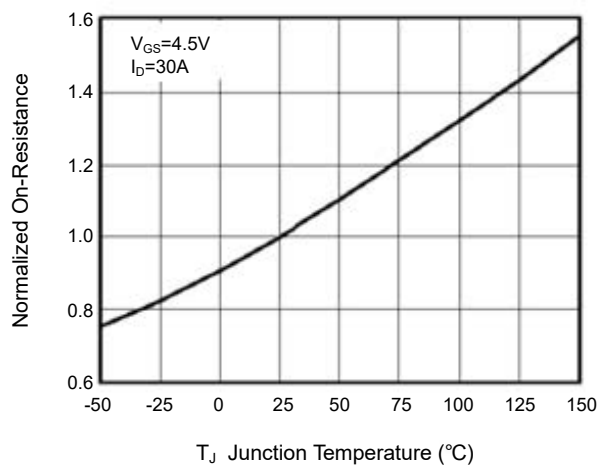
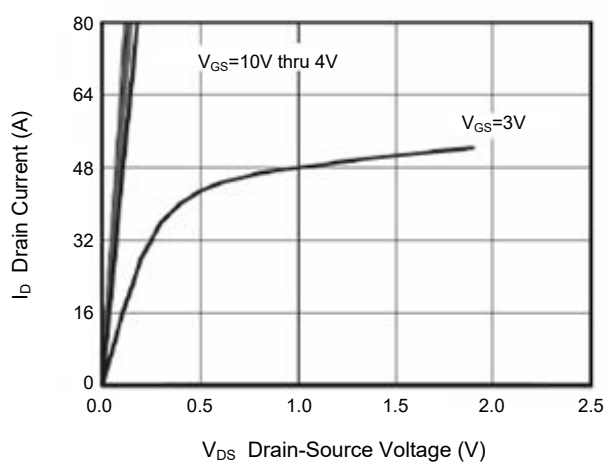
4. E_{AS} condition : $T_J=25^\circ C, V_{DD}=15V, V_G=10V, L=1.0mH, R_g=25\Omega$.



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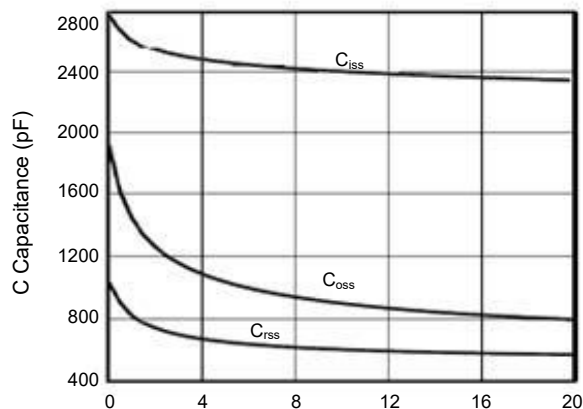
Typical Characteristic Curves



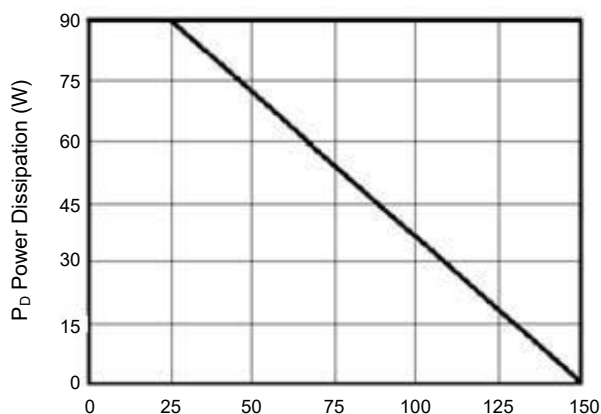


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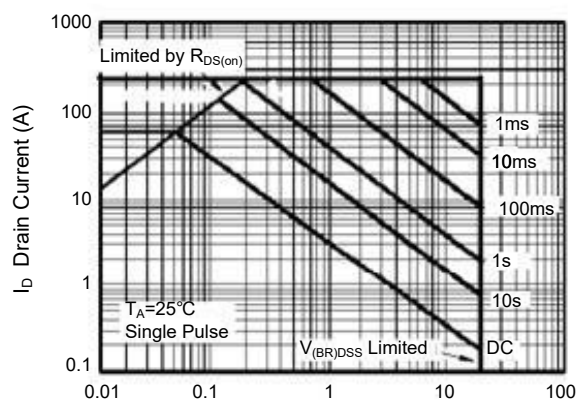
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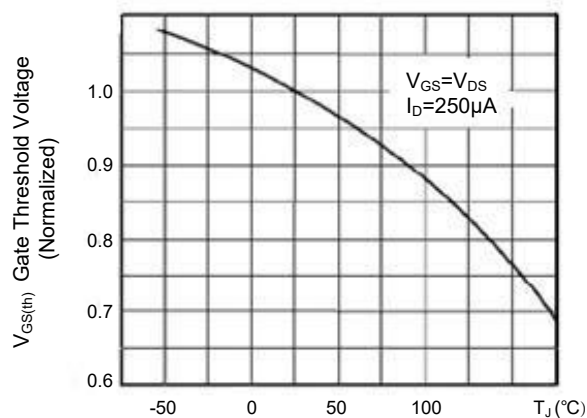
V_{DS} Drain-Source Voltage (V)



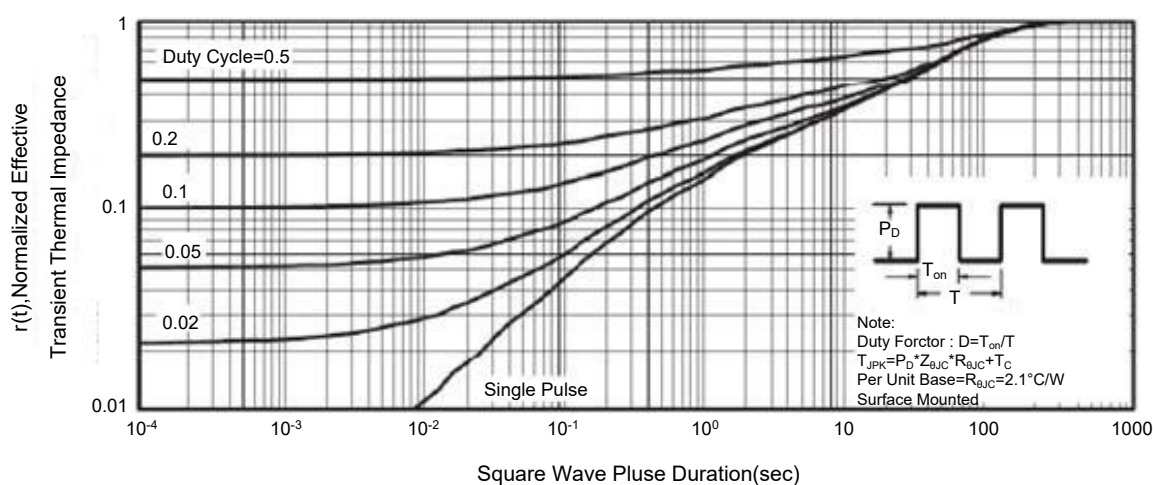
T_J Junction Temperature (°C)



V_{DS} Drain-Source Voltage (V)



T_J Junction Temperature (°C)





Dimensions in mm

