



PJM250N40TO

N- Enhancement Mode Field Effect Transistor

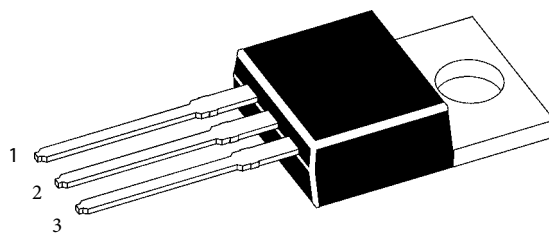
Features

- High density cell design for ultra low $R_{DS(on)}$
- Low $R_{DS(on)}$ and Gate Charge
- Excellent package for good heat dissipation

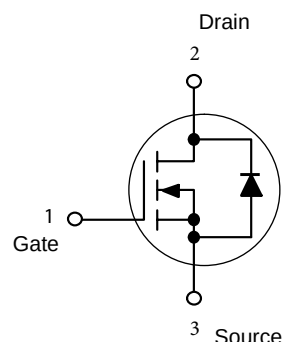
Applications

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

TO-220



Schematic Diagram



Absolute Maximum Ratings

Ratings at $T_c = 25^\circ\text{C}$ unless otherwise specified.

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	250	A
Pulsed Drain Current ^{Note1}	I_{DM}	1000	A
Single Pulse Avalanche Energy	E_{AS}	1300	mJ
Power Dissipation	P_D	242	W
Junction and Storage Temperature Range	T_J, T_{STG}	175, -55 to 175	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Units
Maximum Junction-to-Case ^{Note2}	$R_{\theta JC}$	0.62	$^\circ\text{C/W}$



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Electrical Characteristics (T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	40	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V T _A =25°C	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V	--	--	±0.1	μA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	--	4	V
Static Drain-Source On-Resistance ^{Note3}	R _{DS(ON)}	V _{GS} =10V, I _D =80A	--	2.1	2.7	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, f=1MHz	--	5500	--	pF
Output Capacitance	C _{oss}		--	900	--	pF
Reverse Transfer Capacitance	C _{rss}		--	290	--	pF
Switching Characteristics						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DD} =20V, I _D =80A	--	75	--	nC
Gate Source Charge	Q _{gs}		--	23	--	nC
Gate Drain Charge	Q _{gd}		--	25	--	nC
Turn-On DelayTime	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =80A, R _G =1.6Ω, R _L =0.5Ω	--	19	--	ns
Turn-On Rise Time	t _r		--	65	--	ns
Turn-Off DelayTime	t _{D(off)}		--	49	--	ns
Turn-Off Fall Time	t _f		--	31	--	ns
Source-Drain Diode Characteristics						
Body Diode Forward Voltage ^{Note3}	V _{SD}	I _S =80A, V _{GS} =0V	--	--	1.2	V
Body Diode Continuous Current ^{Note2}	I _S		--	--	250	A

Notes: 1. Repetitive rating; Pulse width limited by maximum junction temperature;
2. Surface Mounted on FR4 Board, t ≤ 10sec;
3. Pulse width ≤ 300μs, Duty Cycle ≤ 2%

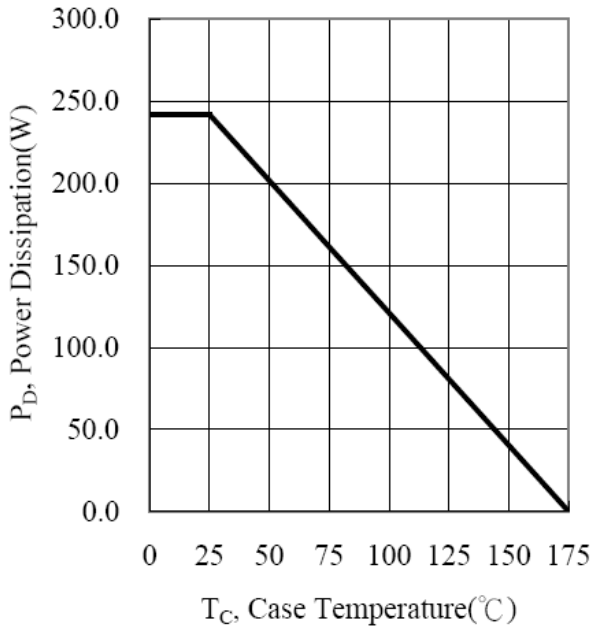


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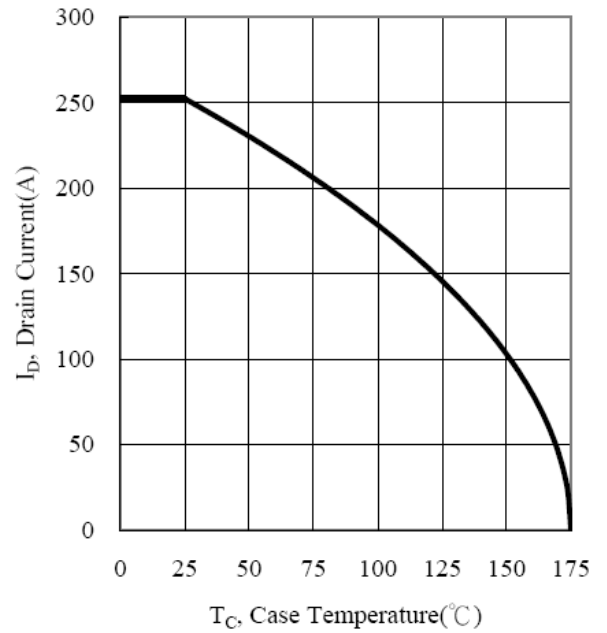
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Electrical Characteristics Curves

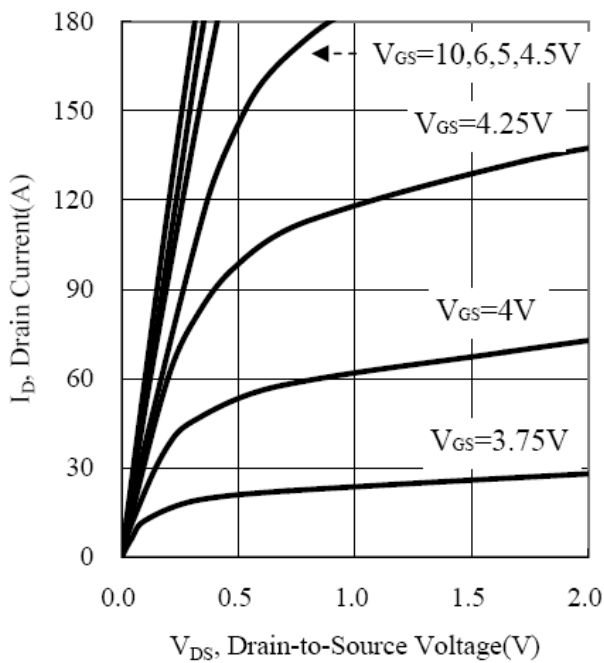
1. Power Dissipation



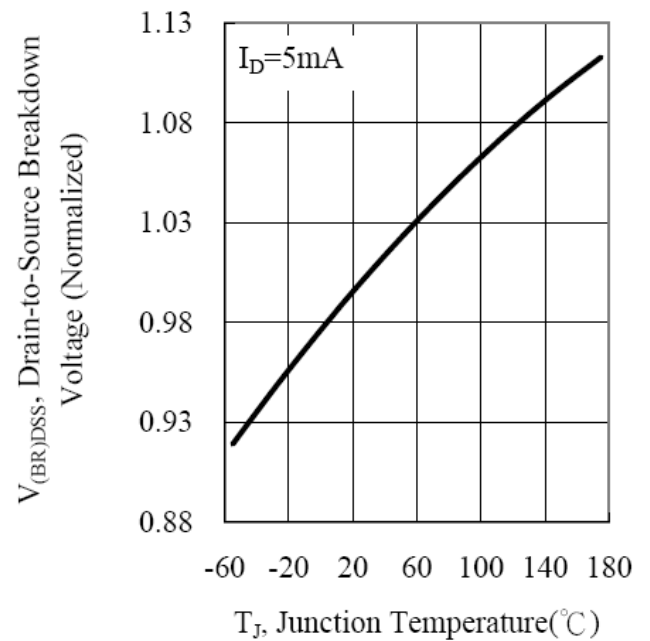
2. Drain Current



3. Output Characteristics $T_C=25^{\circ}\text{C}$



4. Drain-to-Source Breakdown Voltage

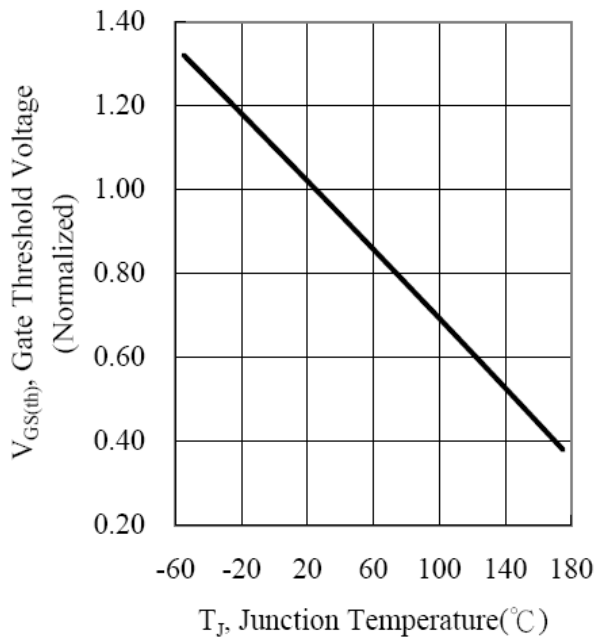




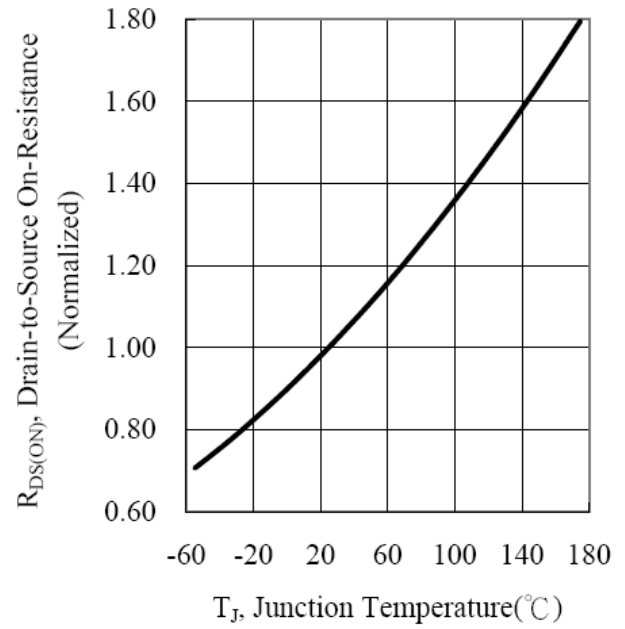
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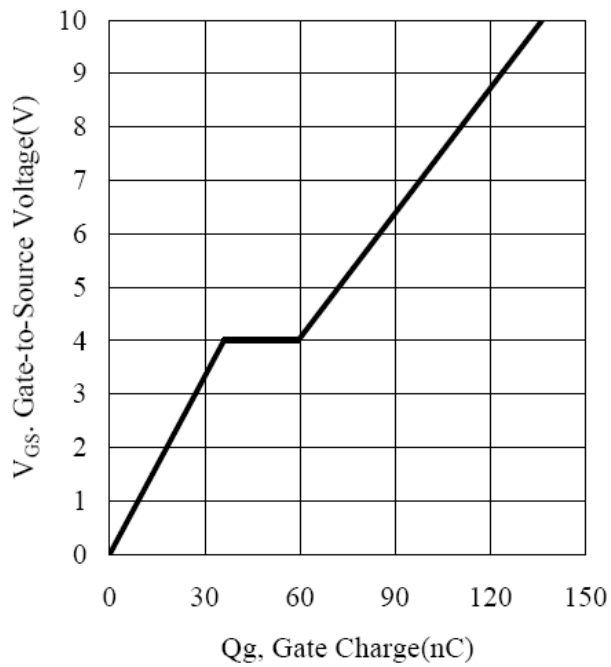
5. Gate Threshold Voltage



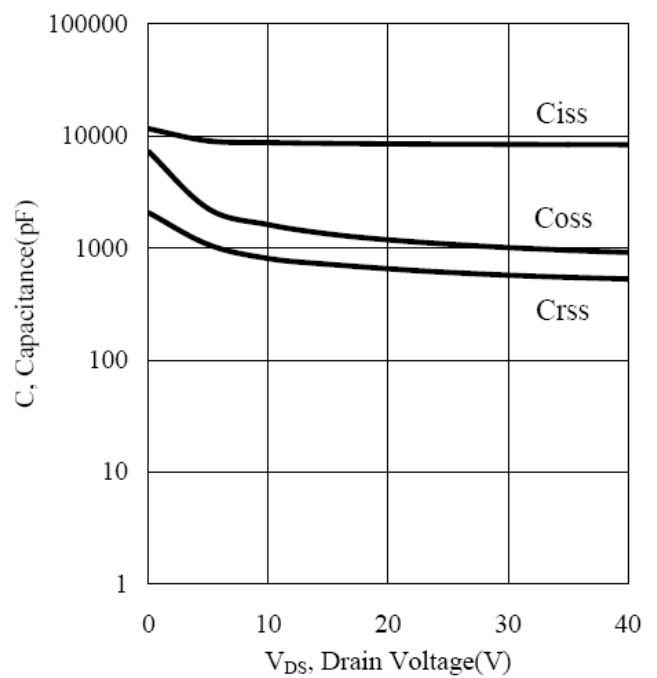
6. Drain-to-Source On-Resistance



7. Typ. Gate Charge



8. Typ. Capacitance

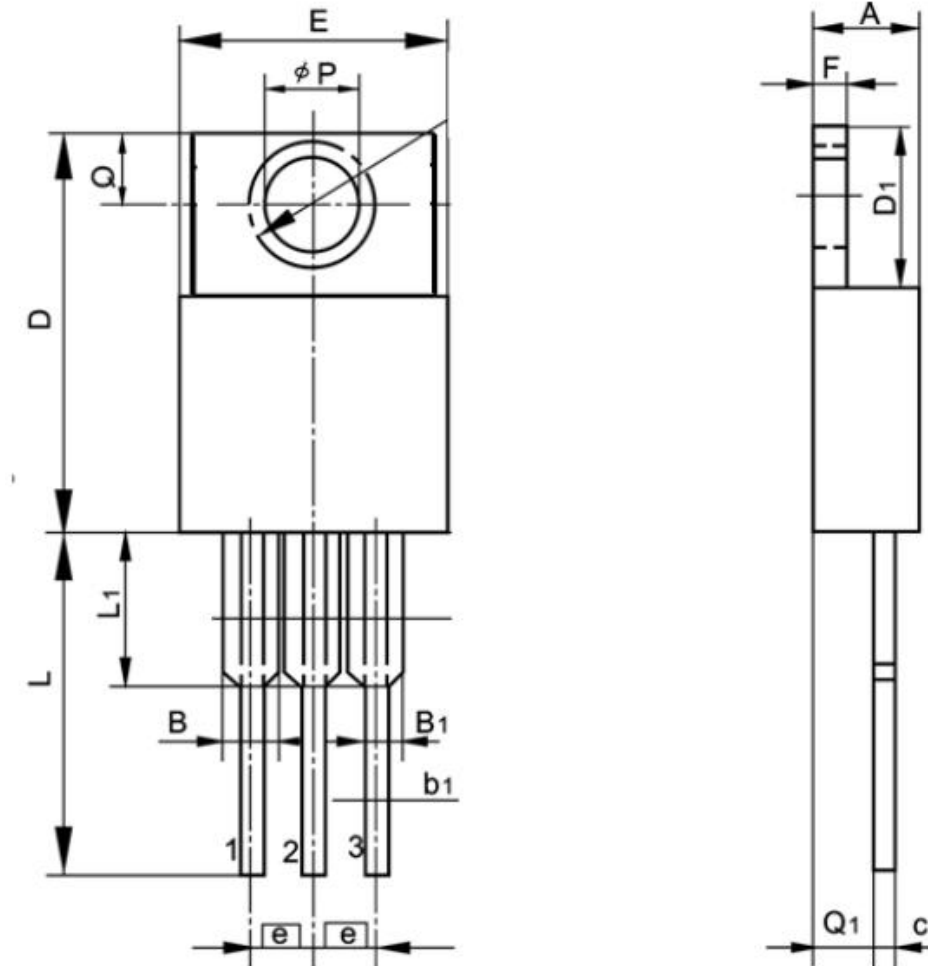




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Package Outline



TO-220 Mechanical Data

UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.00		4.80	E	9.70		10.70
B	1.15		1.45	e		2.54	
B1	0.90		1.40	F	1.10		1.40
b1	0.65		0.95	L	12.50		14.50
c	0.30		0.50	L1	2.90	3.40	3.90
D	14.40		16.40	Q	2.50		3.10
D1	5.90		6.90	Q1	2.00		3.00
				ϕP	3.60		4.00