



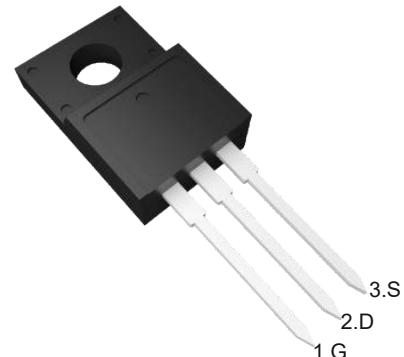
PJM50H21NTF

N-Channel Enhancement Mode Power MOSFET

Features

- Fast Switching
- Low Gate Charge Minimize Switching loss
- Low gate charge and low $R_{DS(on)}$
- $V_{DS} = 500V, I_D = 21A$
- $R_{DS(on)} < 0.23\Omega @ V_{GS} = 10V$

TO-220F

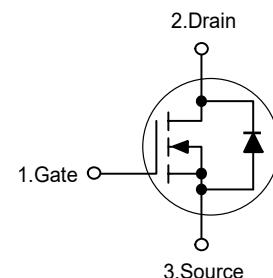


1.Gate 2.Drain 3.Source

Applications

- Adaptor
- Charger
- SMPS Standby Power

Schematic diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	21	A
Drain Current-Pulsed ^{Note1}	I_{DM}	82	A
Maximum Power Dissipation	P_D	55	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient ^{Note2}	R_{JA}	100	°C/W
Maximum Junction-to-Case ^{Note2}	R_{JC}	2.27	°C/W



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Electrical Characteristics

($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	500	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}}=500\text{V}, V_{\text{GS}}=0\text{V}$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 30\text{V}, V_{\text{DS}}=0\text{V}$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	2	--	4	V
Drain-Source On-Resistance ^{Note3}	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=10.5\text{A}$	--	0.21	0.23	Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{\text{DS}}=15\text{V}, I_{\text{D}}=10.5\text{A}$	--	17	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$	--	2864	--	pF
Output Capacitance	C_{oss}		--	286	--	pF
Reverse Transfer Capacitance	C_{rss}		--	25	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=250\text{V}, I_{\text{D}}=21\text{A}$ $V_{\text{GS}}=10\text{V}, R_{\text{G}}=25\Omega$	--	33	--	nS
Turn-on Rise Time	t_r		--	75	--	nS
Turn-off Delay Time	$t_{\text{d}(\text{off})}$		--	181	--	nS
Turn-off Fall Time	t_f		--	83	--	nS
Total Gate Charge	Q_g	$V_{\text{DD}}=250\text{V}, I_{\text{D}}=21\text{A}, V_{\text{GS}}=10\text{V}$	--	63	--	nC
Gate-Source Charge	Q_{gs}		--	14	--	nC
Gate-Drain Charge	Q_{gd}		--	24	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{s}}=21\text{A}$	--	--	1.5	V
Diode Forward Current ^{Note2}	I_{s}		--	--	21	A

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

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

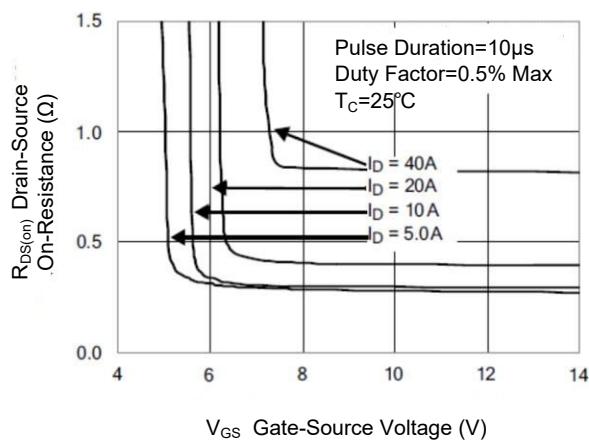
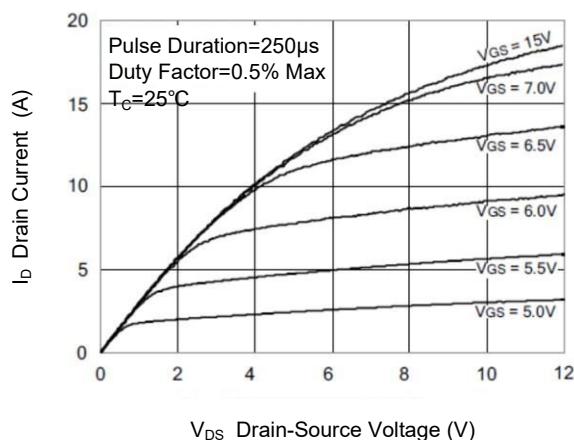
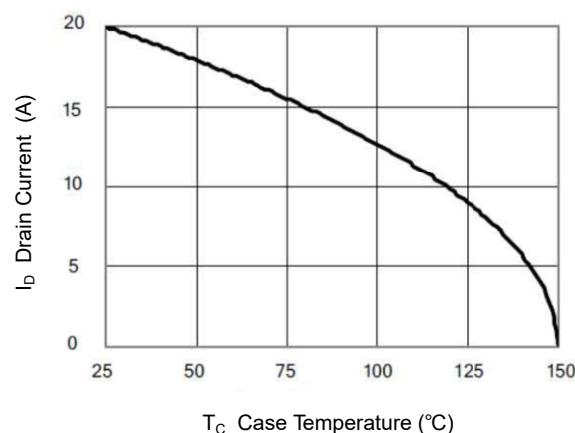
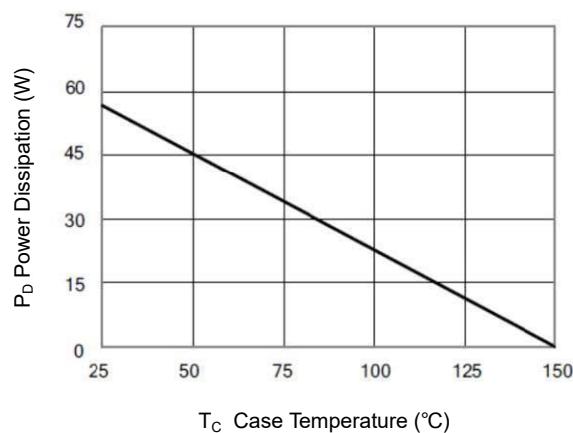
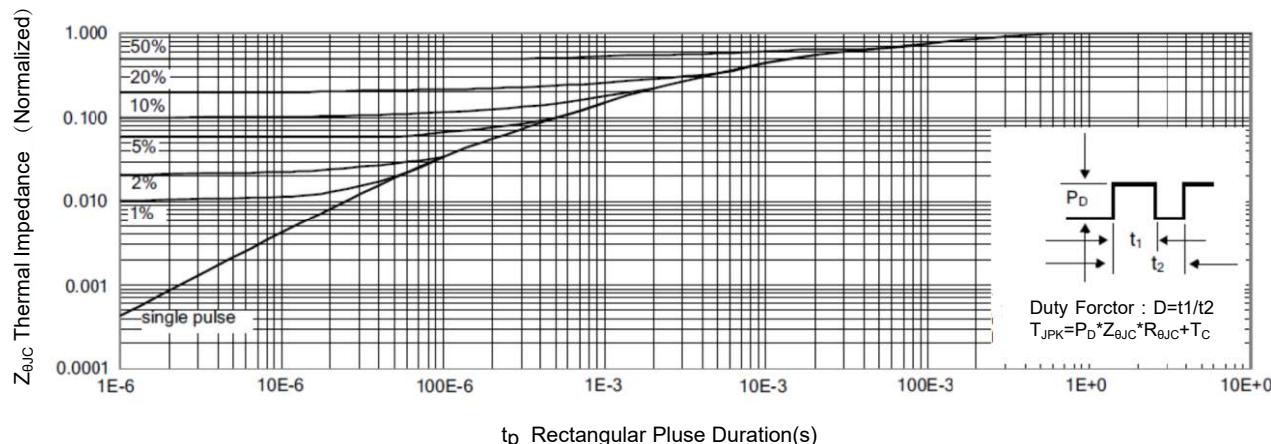
3. Pulse Test: Pulse width $\leq 380\mu\text{s}$, duty cycle $\leq 2\%$.



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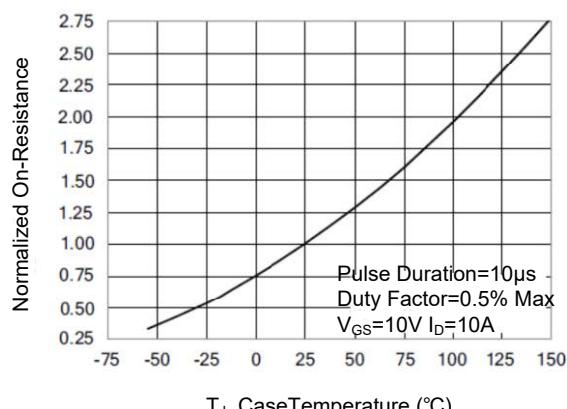
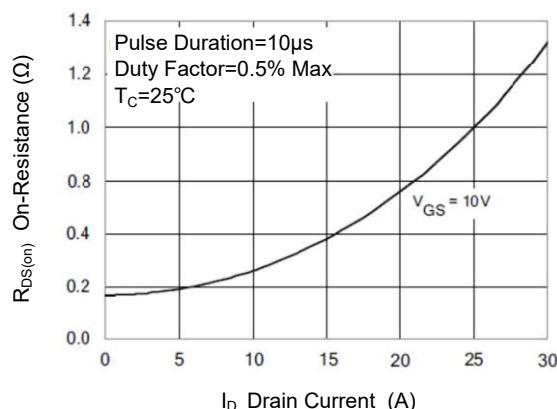
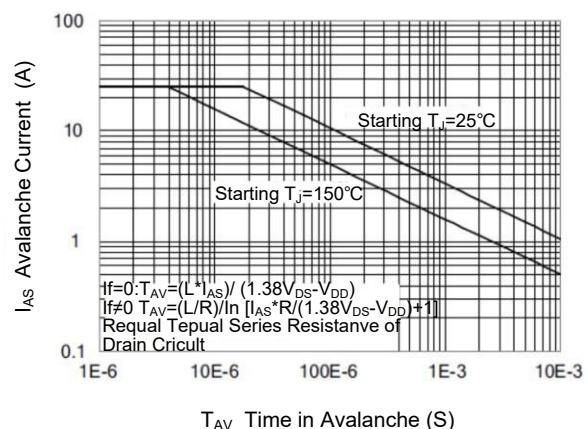
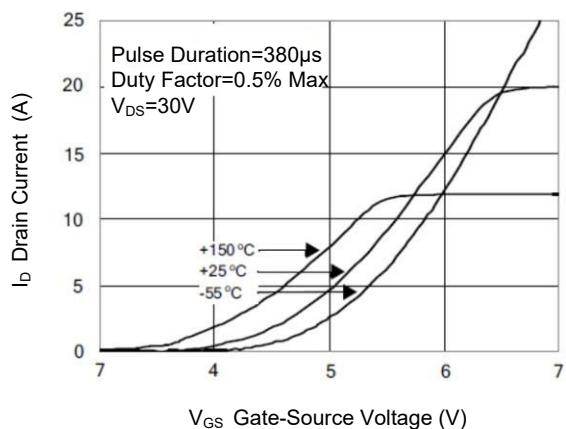
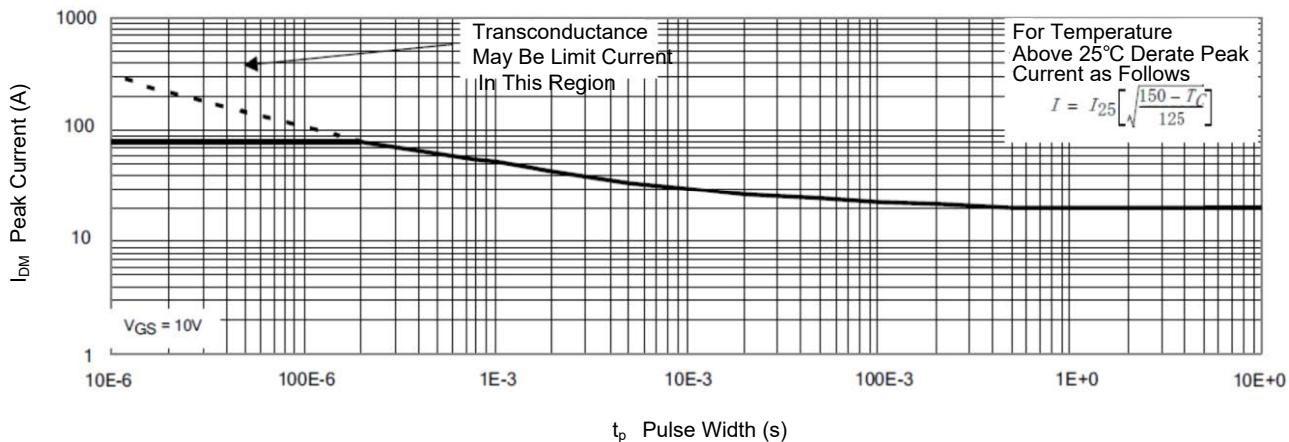
Typical Characteristic Curves





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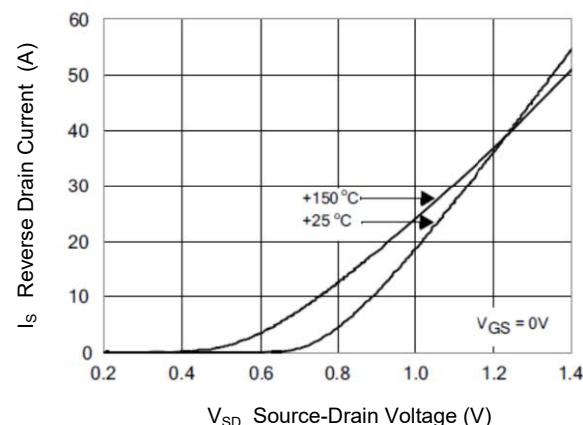
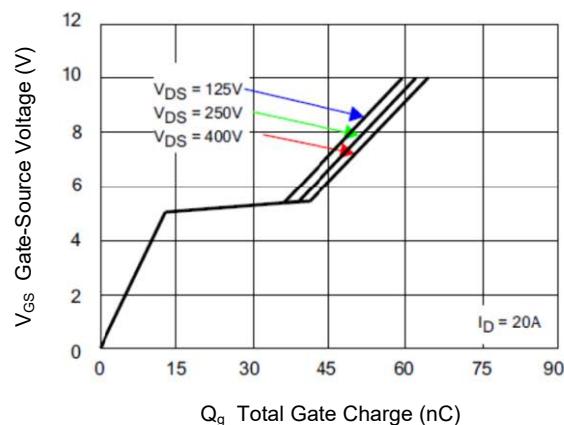
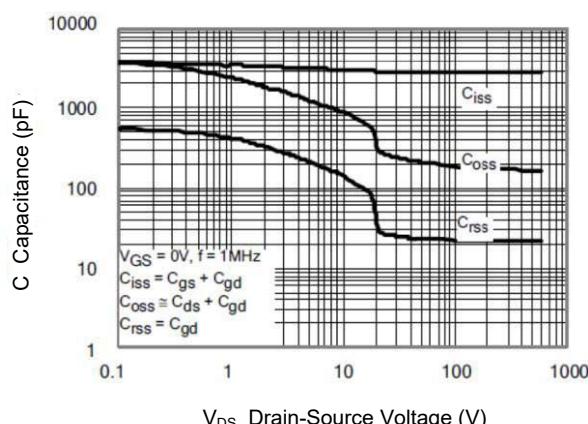
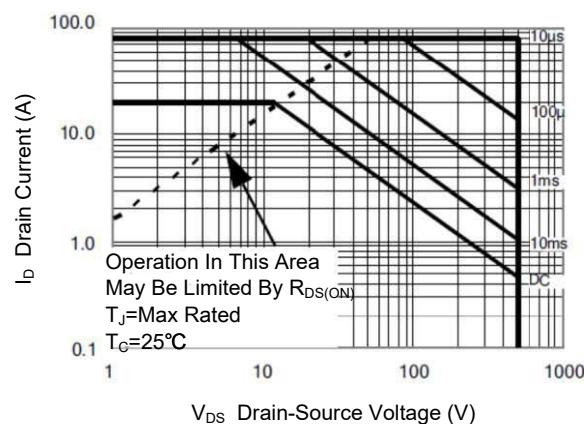
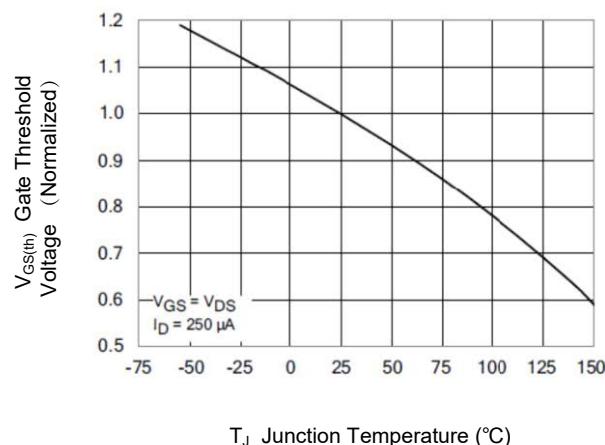
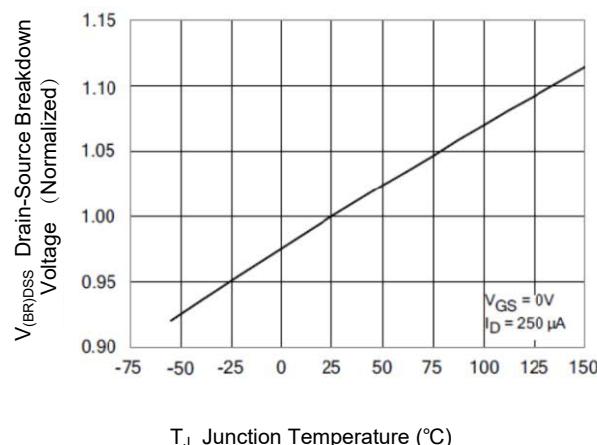
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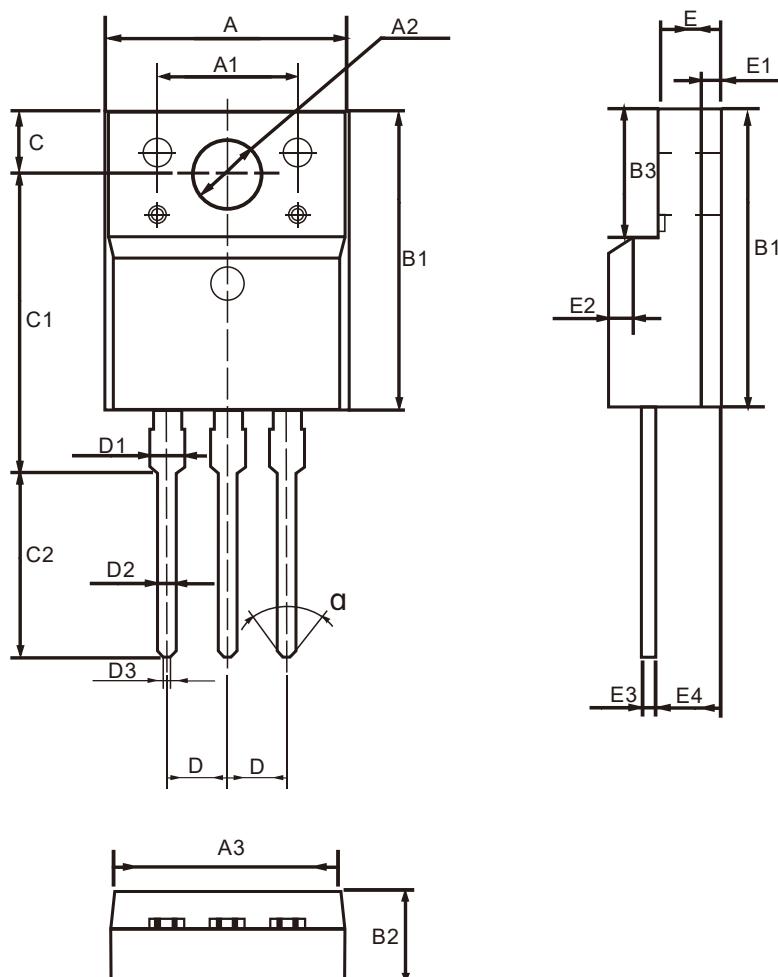




Package Outline

TO-220F

Dimensions in mm



TO-220F Package Dimensions

UNIT : mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	9.80		10.60	D		2.54	
A1		7.00		D1	1.15		1.55
A2	2.90		3.40	D2	0.60		1.00
A3	9.10		9.90	D3	0.20		0.50
B1	15.40		16.40	E	2.24		2.84
B2	4.35		4.95	E1		0.70	
B3	6.00		7.40	E2		1.0 × 45°	
C	3.00		3.70	E3	0.35		0.65
C1	15.00		17.00	E4	2.30		3.30
C2	8.80		10.80	α (度)		30°	