



PJM80H04NTF

Silicon N-Channel Power MOSFET

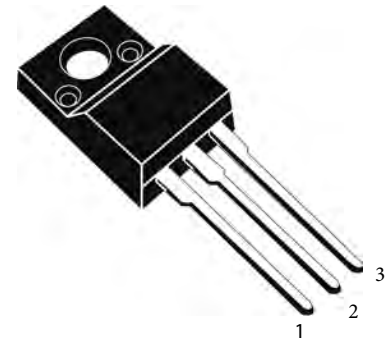
TO-220F

Features

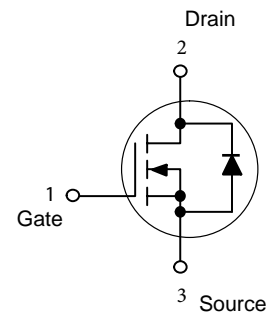
- Self-aligned Planar Technology
- Fast Switching
- Low ON Resistance($R_{dson} \leq 2.0\Omega$)
- Low Gate Charge (Typical Data:35nC)
- Low Reverse transfer capacitances(Typical:15pF)

Applications

- Power switch circuit of adaptor and charger



Schematic diagram



Absolute Maximum Ratings

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

Parameter	Symbol	Value	Units
Drain-to-Source Voltage	V_{DS}	800	V
Continuous Drain Current	I_D	4	A
		$T_C=100^\circ\text{C}$	
Pulsed Drain Current ^{Note 1}	I_{DM}	16	A
Gate-to-Source Voltage	V_{GS}	± 30	V
Single Pulse Avalanche Energy ^{Note 2}	E_{AS}	300	mJ
Avalanche Energy, Repetitive ^{Note 1}	E_{AR}	26	mJ
Avalanche Current ^{Note 1}	I_{AR}	2.3	A
Peak Diode Recovery ^{Note 3}	dv/dt	5.0	V/ns
Power Dissipation	P_D	45	W
Derating Factor above 25°C		0.36	
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Maximum Temperature for Soldering	T_L	300	$^\circ\text{C}$

Note: 1. Repetitive rating; pulse width limited by maximum junction temperature.

2. $L=10\text{mH}$, $I_D=7.7\text{A}$, Start $T_J=25^\circ\text{C}$.

3. $I_{SD}=4\text{A}$, $di/dt \leq 100\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DS}$, Start $T_J=25^\circ\text{C}$.



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Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.78	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100	$^{\circ}C/W$

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
Gate Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 800V, V_{GS} = 0V, T_A = 25^{\circ}C$	-	-	25	μA
		$V_{DS} = 320V, V_{GS} = 0V, T_A = 125^{\circ}C$	-	-	250	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.4A$	-	1.85	2.0	Ω
Forward Transconductance	g_{FS}	$V_{DS} = 15V, I_D = 2.4A$	-	7.5	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 400V, V_{GS} = 10V, I_D = 4A, R_g = 12\Omega$	-	35	-	nC
Gate-Source Charge	Q_{gs}		-	10	-	
Gate-Drain Charge	Q_{gd}		-	16	-	
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	-	1350	-	pF
Output Capacitance	C_{oss}		-	100	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 400V, R_g = 12\Omega, V_{GS} = 10V, I_D = 4A$	-	16	-	ns
Turn-On Rise Time	t_r		-	18	-	
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	
Turn-Off Fall Time	t_f		-	25	-	
Source-Drain Diode Characteristics						
Diode Forward Current	I_{SD}		-	-	4	A
Diode Forward Voltage	V_{SD}	$I_S = 4A, V_{GS} = 0V$	-	-	1.5	V
Reverse Recovery Time	t_{rr}	$I_S = 4A, T_J = 25^{\circ}C, di/dt = 100A/\mu s, V_{GS} = 0V$	-	820	-	ns
Reverse Recovery Charge	Q_{rr}		-	4.95	-	μC



Electrical Characteristics Curves

Figure 1. Maximum Power Dissipation

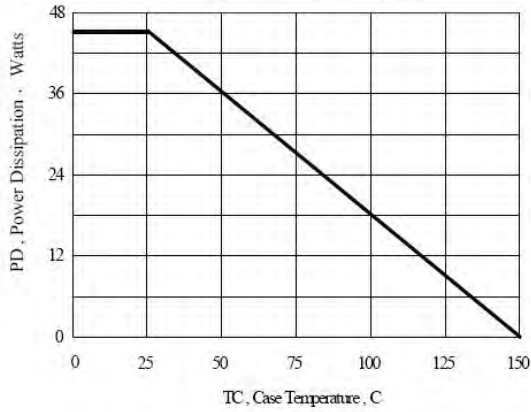


Figure 2. Maximum Continuous Drain Current

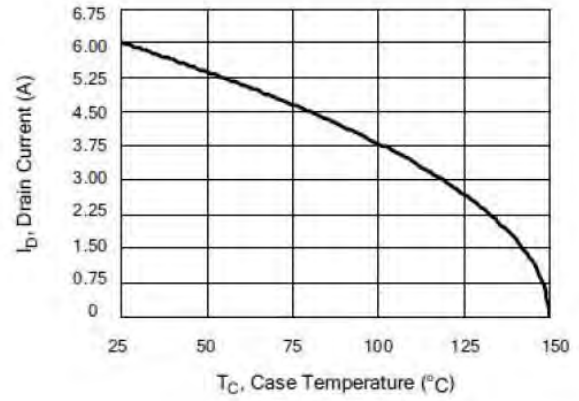


Figure 3. Typical Output Characteristics

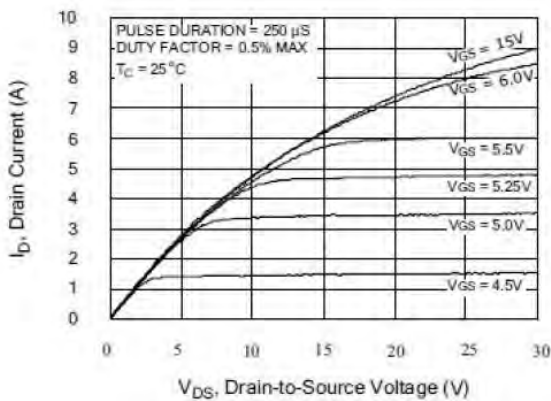


Figure 4. ON Resistance Characteristics

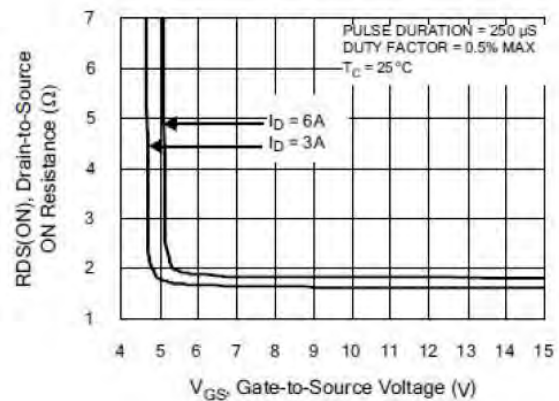


Figure 5. ON Resistance Characteristics

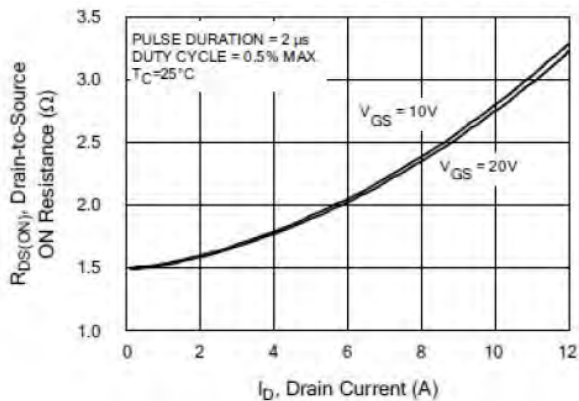
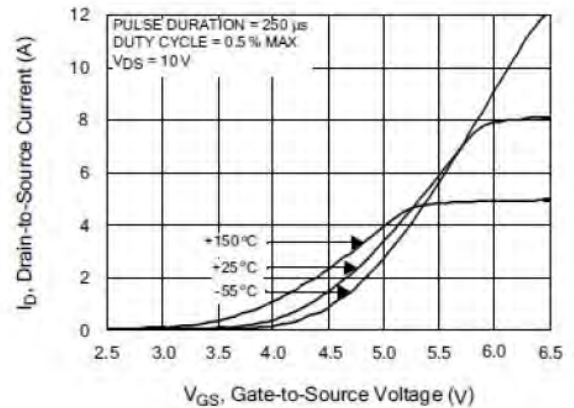


Figure 6. Typical Transfer Characteristics





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Figure 7. Safe Operating Area

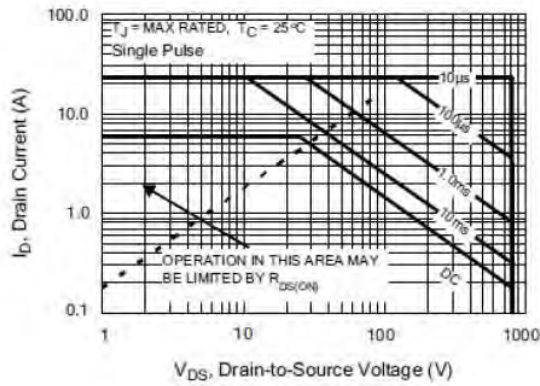


Figure 8. Capacitance Characteristics

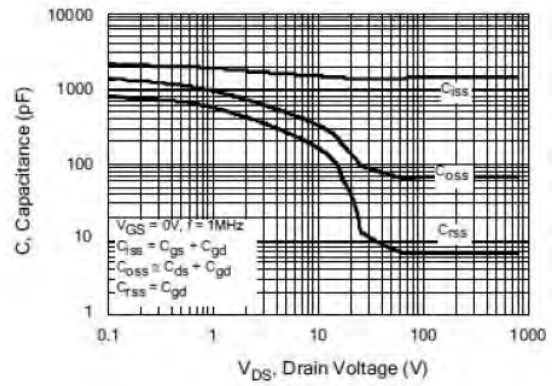


Figure 9. Breakdown Voltage Characteristics

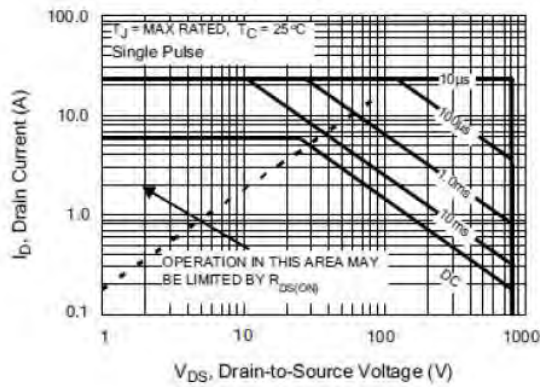


Figure 10. Threshold Voltage Characteristics

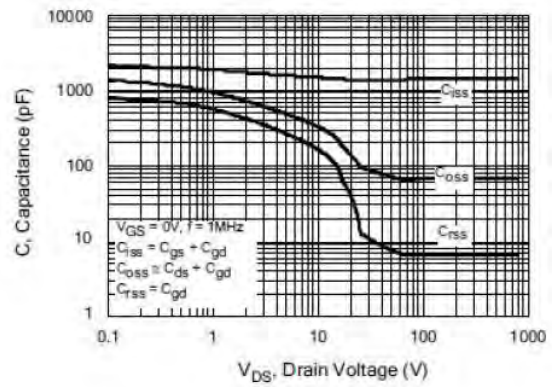
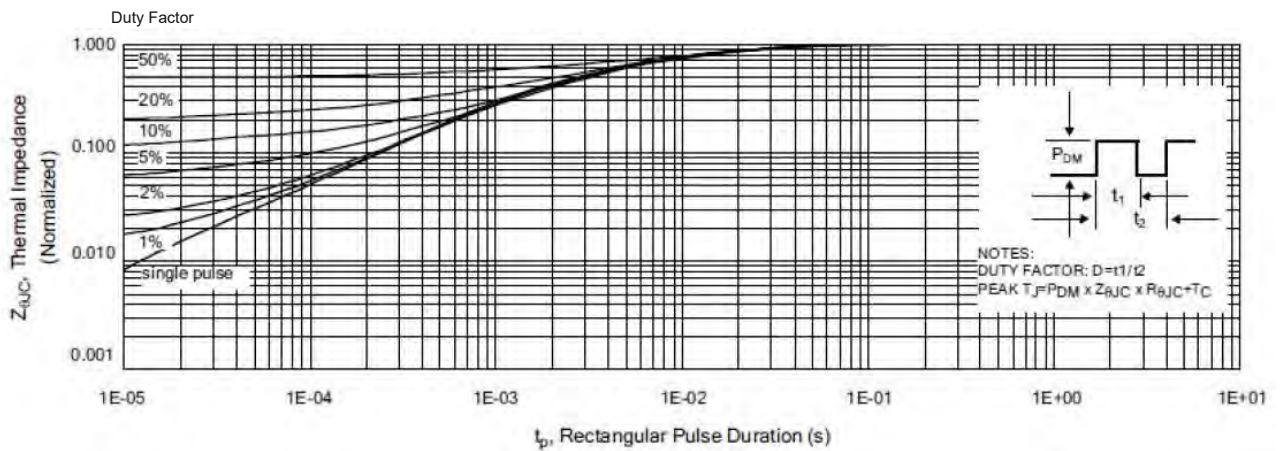
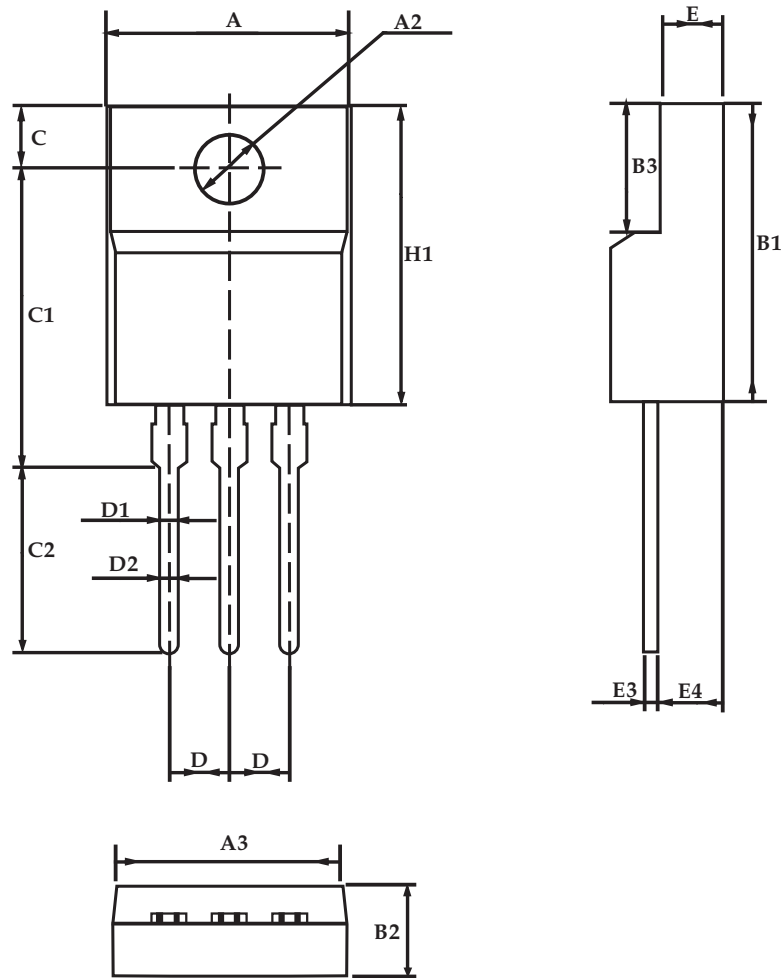


Figure 11. Maximum Effective Thermal Impedance





Package Outline



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°	