



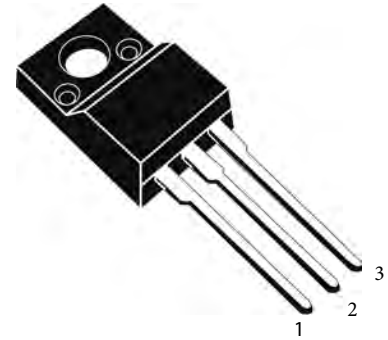
PJM65H04NTF

Silicon N-Channel Power MOSFET

Features

- Self-aligned Planar Technology
- Fast Switching
- Low ON Resistance (Typical:1.9Ω)
- Low Reverse Transfer Capacitances
- Excellent Package for Good Heat Dissipation

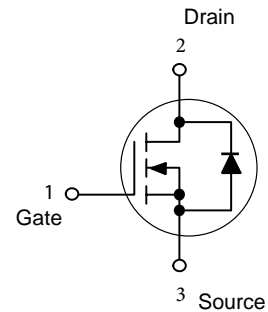
TO-220F



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}	650	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 1}	E_{AS}	280	mJ
Avalanche Energy, Repetitive ^{Note 2}	E_{AR}	30	mJ
Avalanche Current ^{Note 2}	I_{AR}	2.5	A
Power Dissipation	P_D	30	W
Operating Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	4.17	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$

Note: 1. $L = 10\text{mH}$, $I_D = 7.6\text{A}$, start $T_J = 25^\circ\text{C}$.

2. Repetitive rating; Pulse width limited by maximum junction temperature.



PJM65H04NTF

Silicon N-Channel Power MOSFET

Electrical Characteristics

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650	-	-	V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V	
Gate Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 1	μA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650V, V_{GS} = 0V,$	$T_A = 25^\circ\text{C}$	-	-	1.0	μA
			$T_A = 125^\circ\text{C}$	-	-	100	
Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 2.0A$	-	1.9	2.4	Ω	
Dynamic Characteristics							
Total Gate Charge	Q_g	$V_{DD} = 325V, V_{GS} = 10V,$ $I_D = 4A,$	-	14.5	-	nC	
Gate-Source Charge	Q_{gs}		-	3.0	-		
Gate-Drain Charge	Q_{gd}		-	6.0	-		
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1\text{MHz}$	-	544	-	pF	
Output Capacitance	C_{oss}		-	55	-		
Reverse Transfer Capacitance	C_{rss}		-	8.5	-		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 325V, R_g = 4.7\Omega,$ $V_{GS} = 10V, I_D = 4.0A,$	-	10	-	ns	
Turn-On Rise Time	t_r		-	11	-		
Turn-Off Delay Time	$t_{d(off)}$		-	31	-		
Turn-Off Fall Time	t_f		-	14	-		
Forward Transconductance	g_{fs}	$V_{DS} = 15V, I_D = 2.0A$	-	3.5	-	S	
Source-Drain Diode Characteristics							
Diode Forward Continuous Current	I_{SD}		-	-	4	A	
Diode Forward Pulsed Current	I_{SM}		-	-	16	A	
Diode Forward Voltage	V_{SD}	$I_S = 4.0A, V_{GS} = 0V$	-	-	1.5	V	
Reverse Recovery Time	t_{rr}	$I_S = 4.0A, T_J = 25^\circ\text{C}$ $di/dt = 100A/\mu s, V_{GS} = 0V$	-	430	-	ns	
Reverse Recovery Charge	Q_{rr}		-	1270	-	μC	



PJM65H04NTF

Silicon N-Channel Power MOSFET

Electrical Characteristics Curves

Figure 1. Maximum Power Dissipation

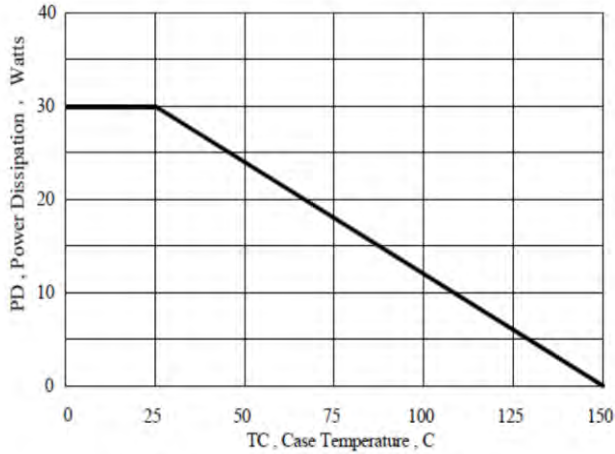


Figure 2. Typical output characteristics

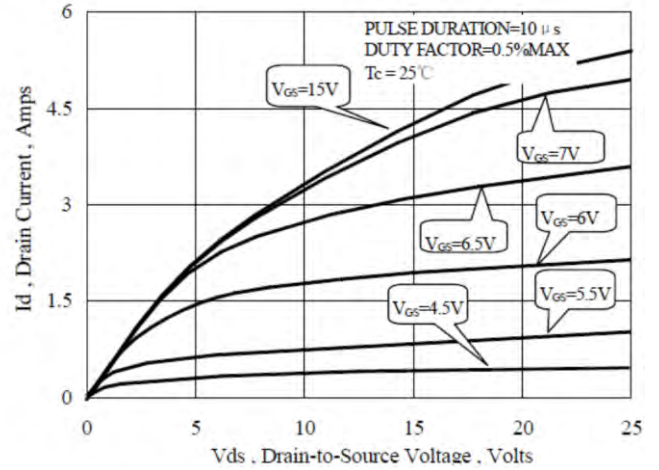


Figure 3. Typical transfer characteristics

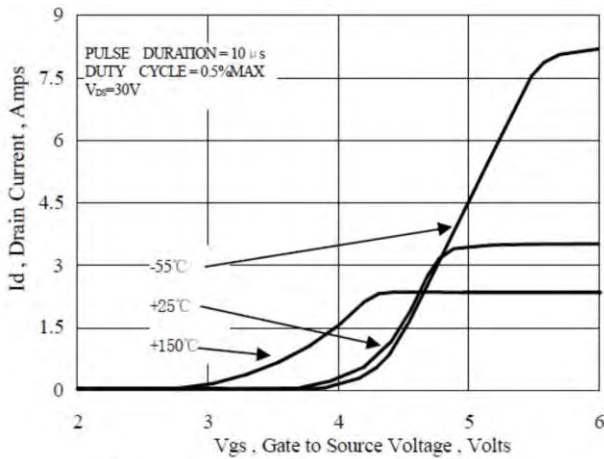


Figure 4. ON Resistance Characteristics

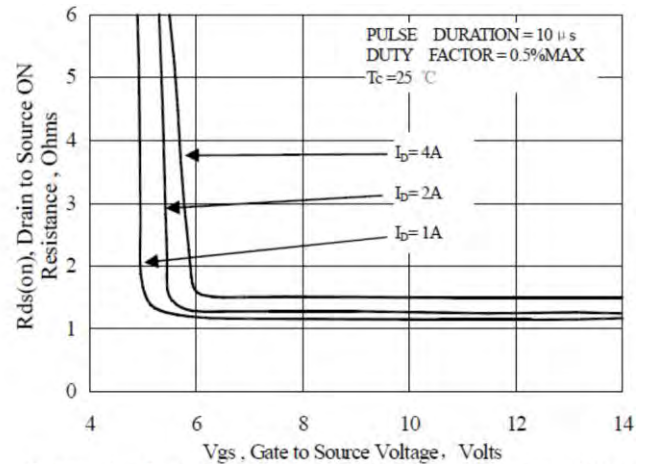


Figure 5. ON Resistance Characteristics

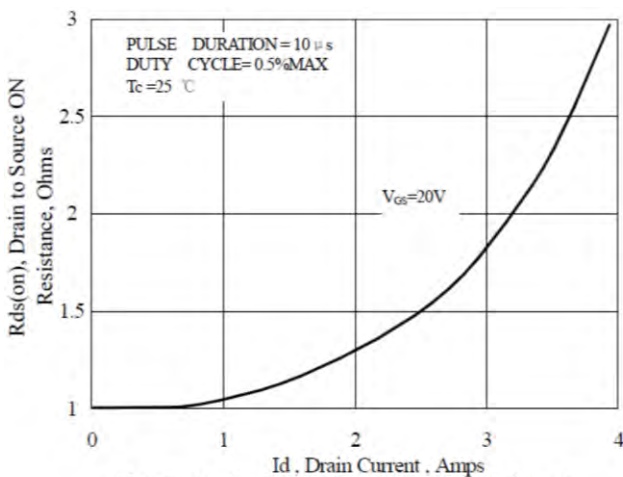
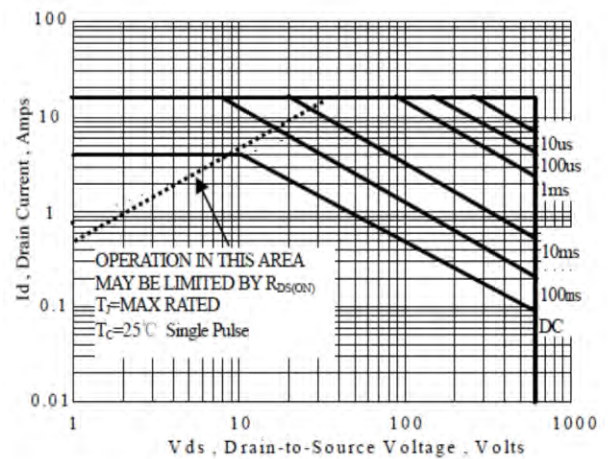


Figure 6. Safe Operating Area





PJM65H04NTF

Silicon N-Channel Power MOSFET

Figure 7. Threshold Voltage Characteristics

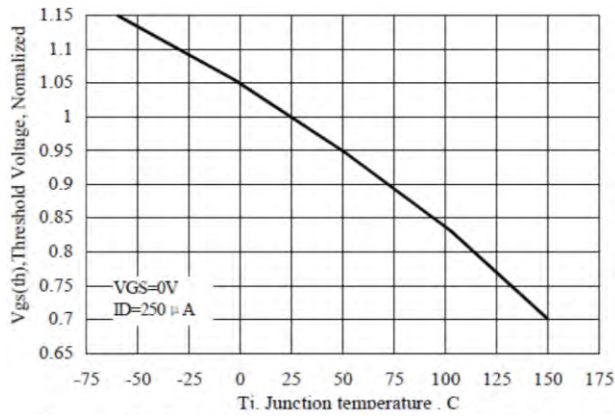


Figure 8. Breakdown Voltage Characteristics

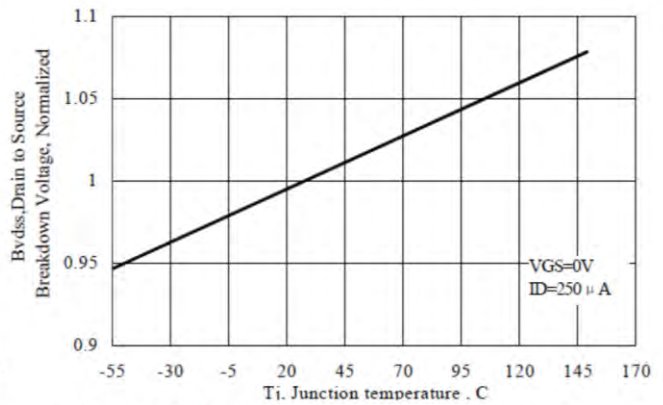


Figure 9. Typical Capacitance Characteristics

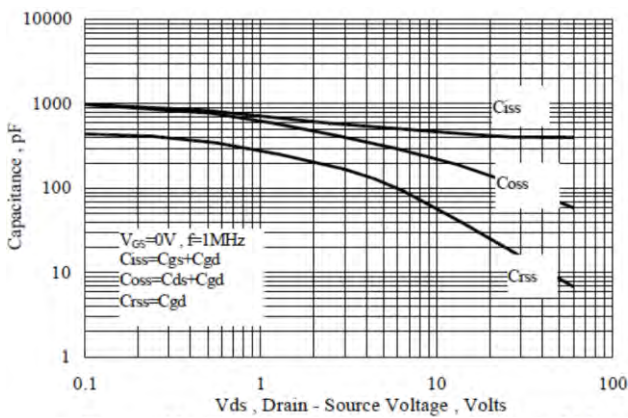


Figure 10. Typical Gate Charge VS Vgs Voltage

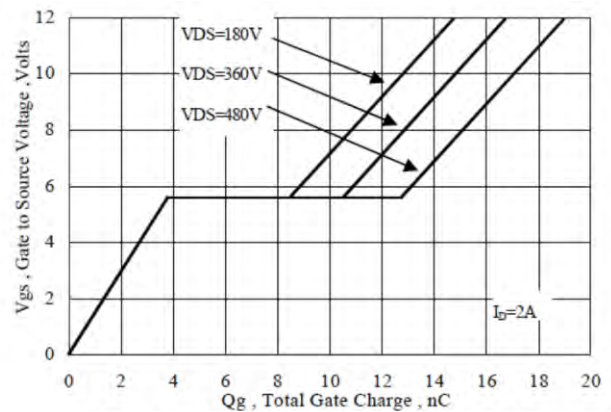
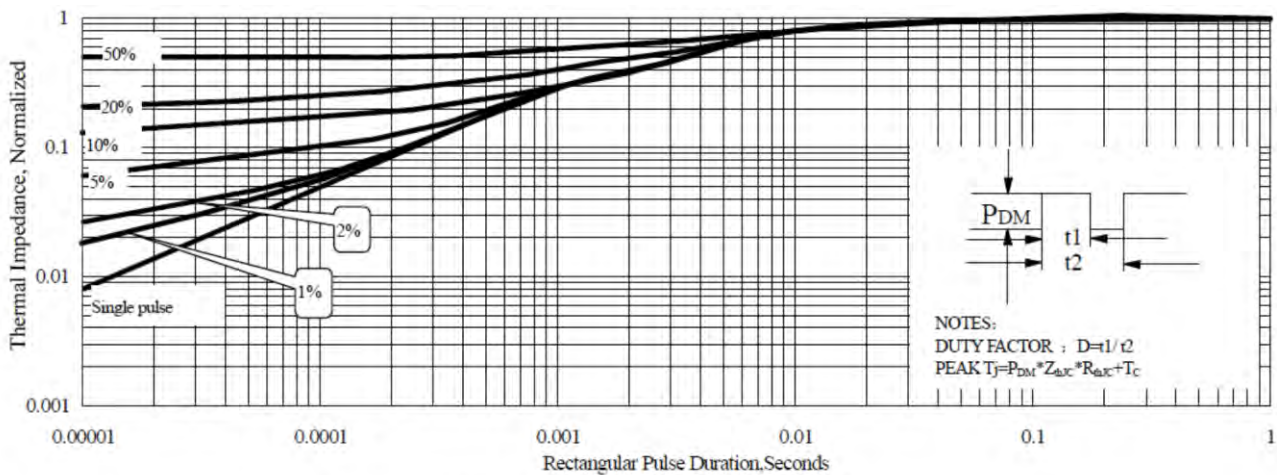
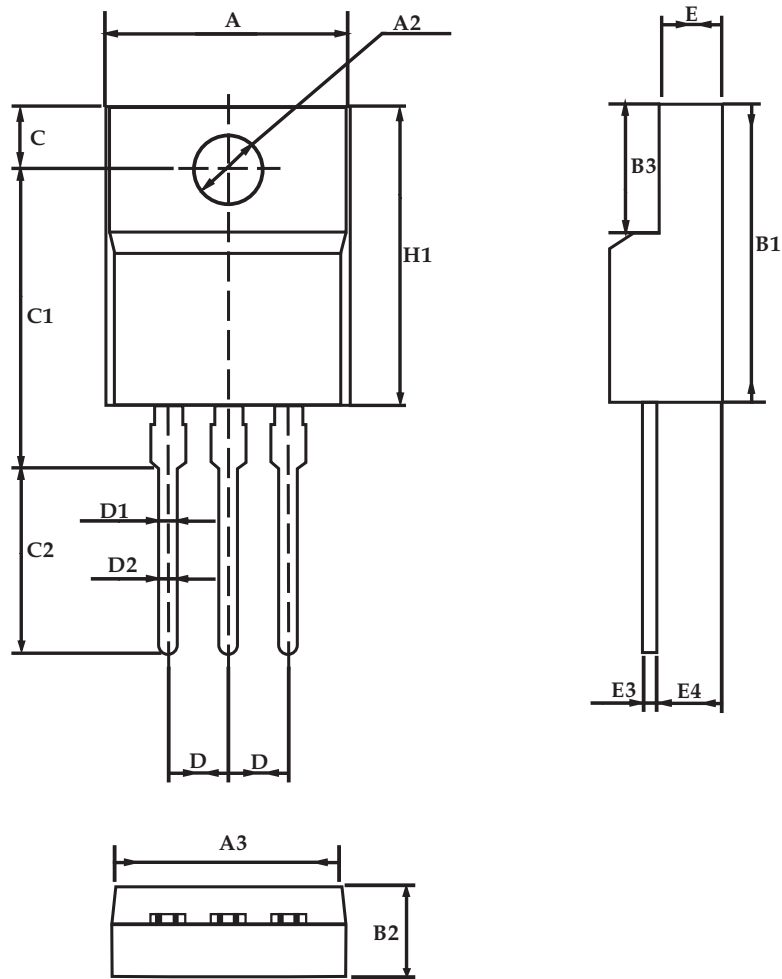


Figure 11. Maximum Effective Thermal Impedance





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°	