



PJM60H07NTF

Single N-Channel Power MOSFET

Features

- DC-fast switching
- ESD improved capability
- Low on resistance
- Low gate charge
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test

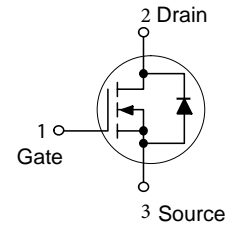
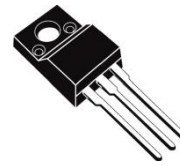
$V_{DSS}=600V$

$I_D=7A$

$P_D=40W$

$R_{DS(on)(TYP)}=0.9\Omega$

TO-220F



Applications

- Power switch circuit of adaptor and charger

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise stated)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	600	V
I_D	Continuous Drain Current	7	A
	Continuous Drain Current $T_C=100^\circ C$	4.5	A
I_{DM}^{a1}	Pulsed Drain Current	28	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}^{a2}	Single Pulse Avalanche Energy	560	mJ
E_{AR}^{a1}	Avalanche Energy ,Repetitive	54	mJ
I_{AR}^{a1}	Avalanche Current	3.3	A
dv/dt^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	40	W
	Derating Factor above $25^\circ C$	0.32	W/ $^\circ C$
$V_{ESD(GS)}$	Gate source ESD (HBM-C= 100pF, R=1.5k Ω)	3000	V
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150 , -55 to 150	$^\circ C$
T_L	Maximum Temperature for Soldering	300	$^\circ C$

a1 : Repetitive rating; pulse width limited by maximum junction temperature

a2 : L=10mH, $I_D=11A$, Start $T_J=25^\circ C$

a3 : $I_{SD}=7A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}$, Start $T_J=25^\circ C$



Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	3.13	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	$^{\circ}C/W$

Electrical Characteristics ($T_C=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
Off Characteristics						
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	600	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A, \text{Reference } 25^{\circ}C$	--	0.61	--	$V/^{\circ}C$
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=600V, V_{GS}=0V, T_a=25^{\circ}C$	--	--	10	μA
		$V_{DS}=480V, V_{GS}=0V, T_a=125^{\circ}C$	--	--	100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V$	--	--	10	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-20V$	--	--	-10	μA
On Characteristics						
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=3.5A$	--	0.9	1.2	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	--	4.0	V
g_{fs}	Forward Trans conductance	$V_{DS}=15V, I_D=3.5A$	--	5	--	S
Pulse width<380 μs ; duty cycle<2%.						
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$	--	950	--	pF
C_{oss}	Output Capacitance		--	98	--	
C_{rss}	Reverse Transfer Capacitance		--	10	--	
Resistive Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$I_D=7A, V_{DD}=325V$ $V_{GS}=10V, R_g=9.1\Omega$	--	11	--	ns
t_r	Rise Time		--	10	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	36	--	
t_f	Fall Time		--	18	--	
Q_g	Total Gate Charge	$I_D=7A, V_{DD}=325V, V_{GS}=10V$	--	25	--	nC
Q_{gs}	Gate to Source Charge		--	4	--	
Q_{gd}	Gate to Drain (" Miller ")Charge		--	10	--	
Source-Drain Diode Characteristics						
I_{SD}	Continuous Source Current (Body Diode)		--	--	7	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	28	A
V_{SD}	Diode Forward Voltage	$I_S=7A, V_{GS}=0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S=7A, T_J=25^{\circ}C$	--	201	--	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt=100A/\mu s, V_{GS}=0V$	--	989	--	nC
Pulse width<380 μs ; duty cycle<2%.						



Typical Characteristic Curves

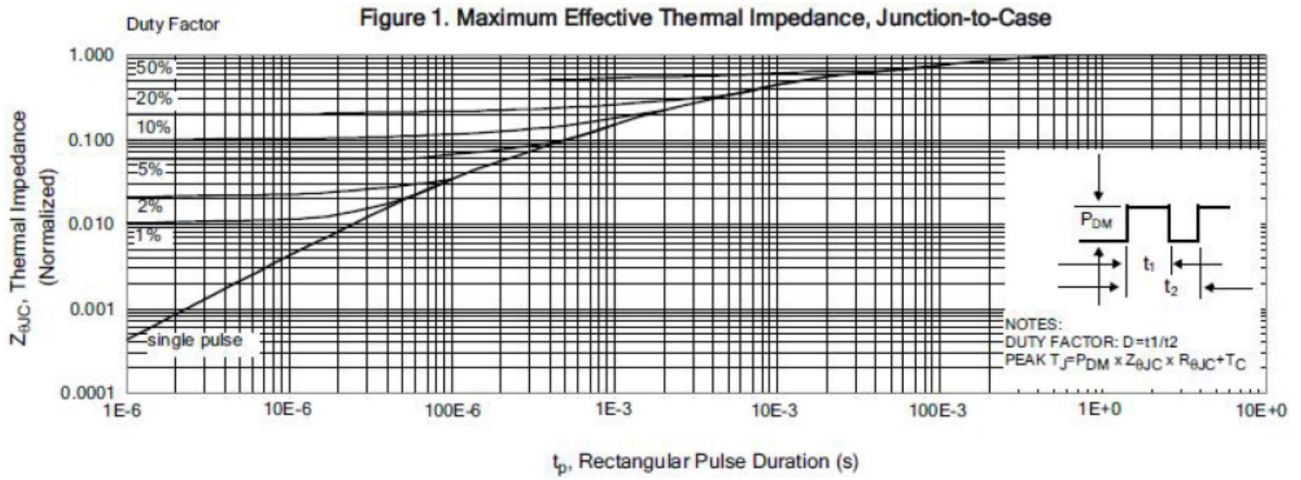


Figure 2. Maximum Power Dissipation vs Case Temperature

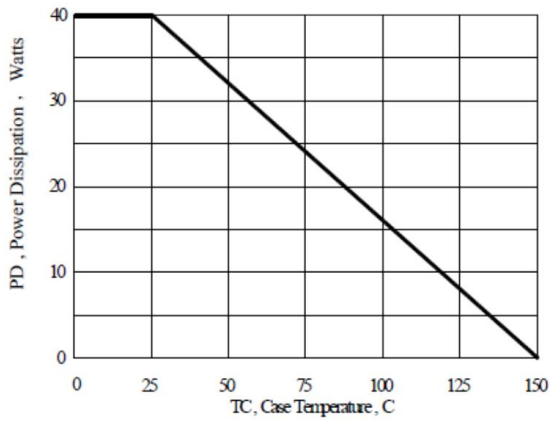


Figure 4. Typical Output Characteristics

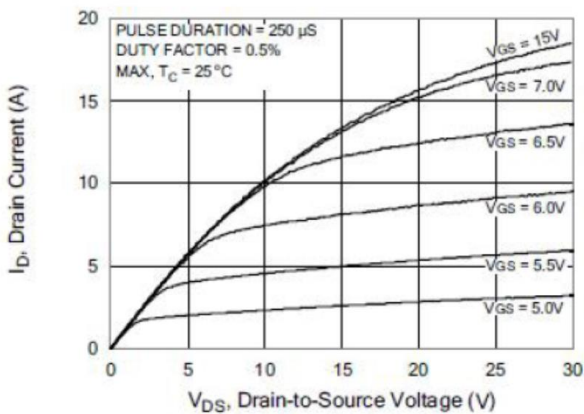


Figure 3. Maximum Continuous Drain Current vs Case Temperature

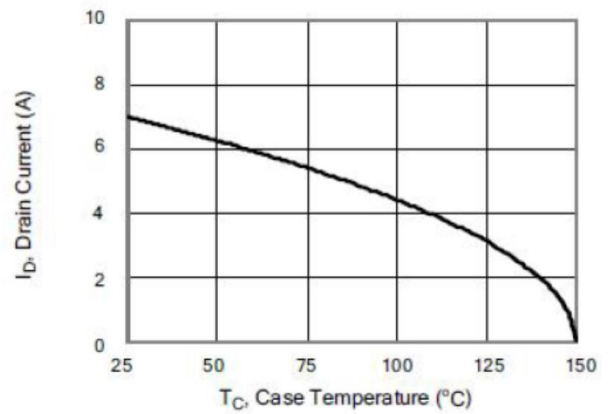


Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

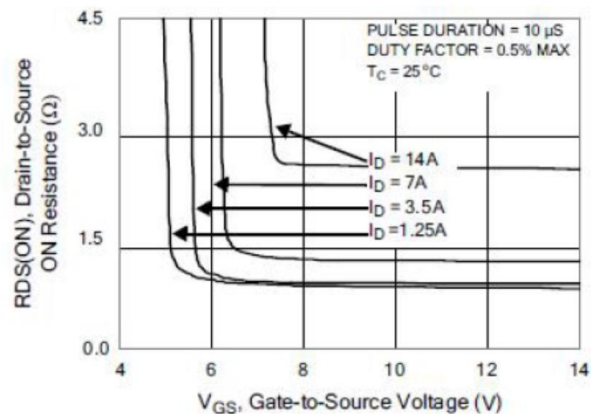




Figure 6. Maximum Peak Current Capability

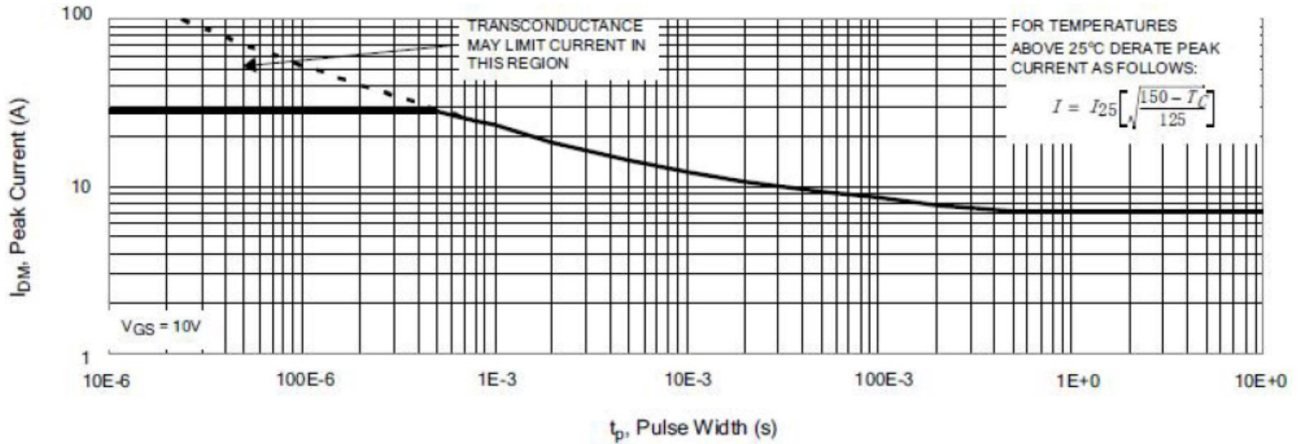


Figure 7. Typical Transfer Characteristics

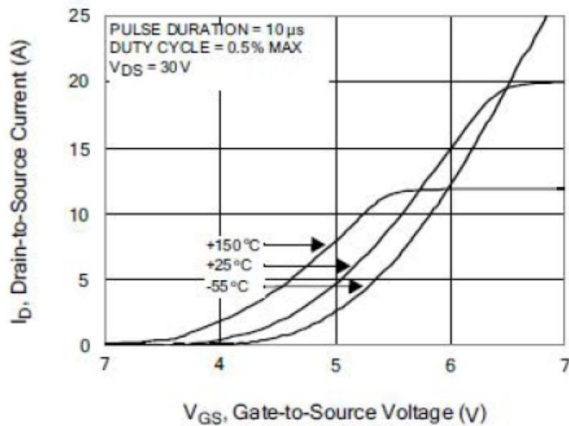


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

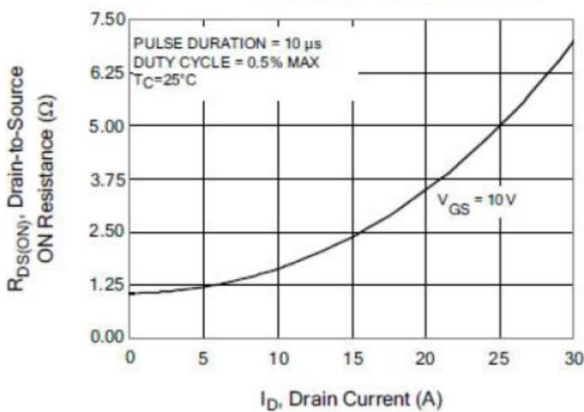


Figure 8. Unclamped Inductive Switching Capability

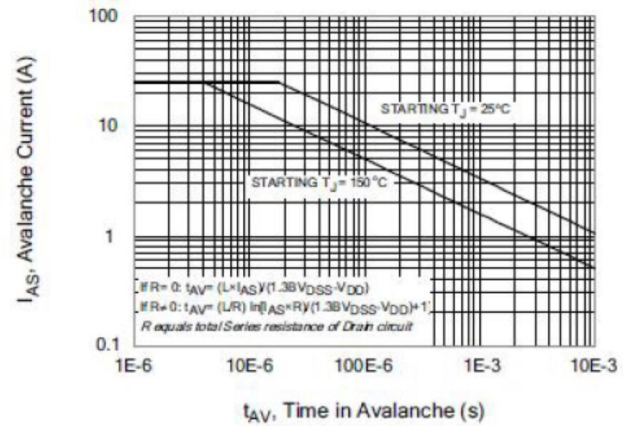


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

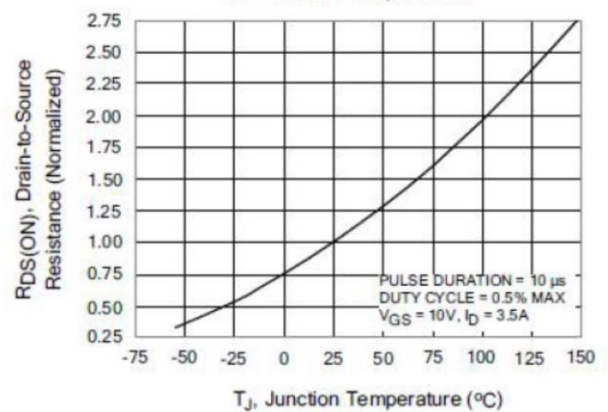




Figure 11. Typical Breakdown Voltage vs Junction Temperature

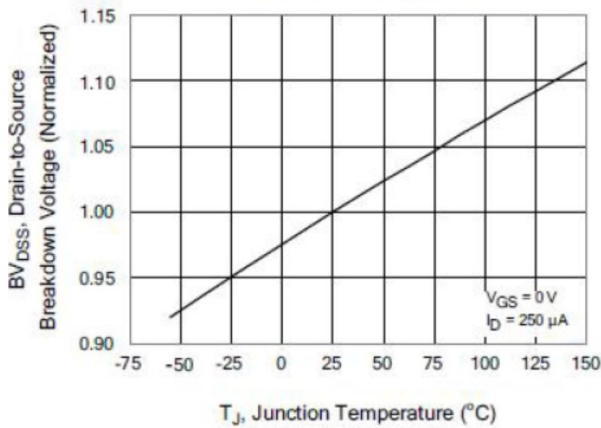


Figure 12. Typical Threshold Voltage vs Junction Temperature

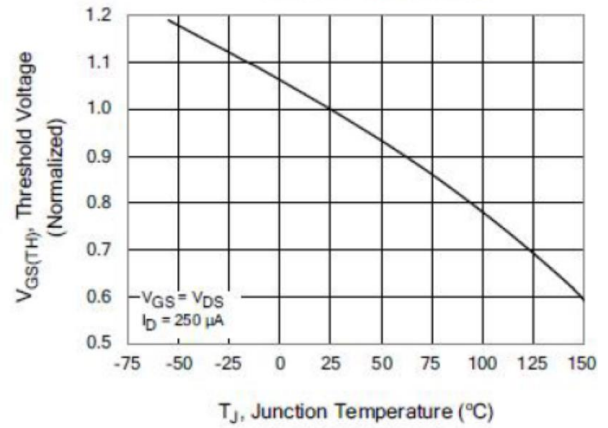


Figure 13. Maximum Forward Bias Safe Operating Area

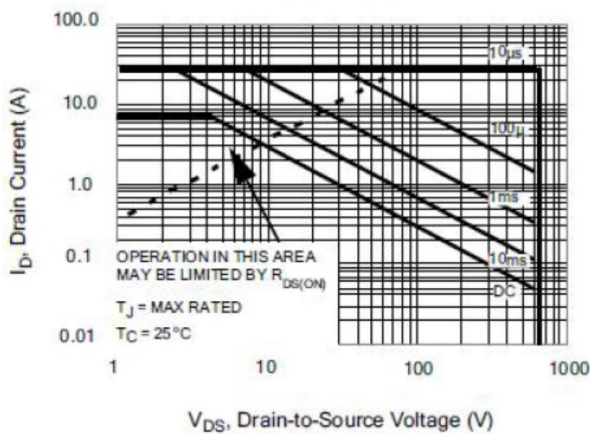


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

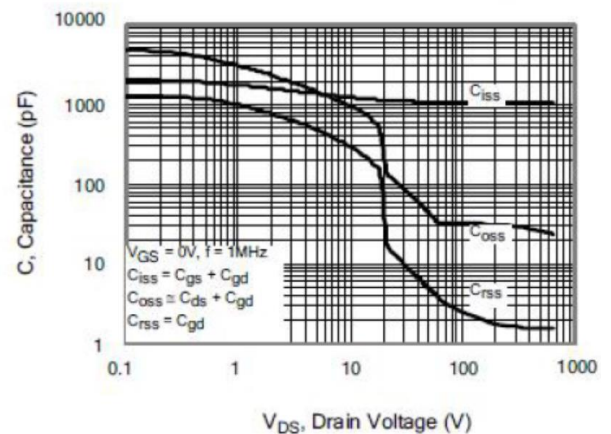


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

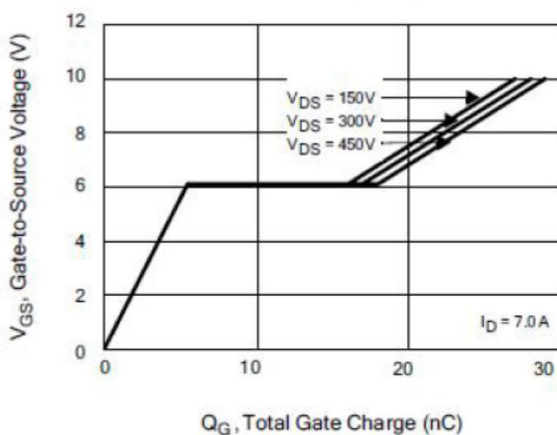
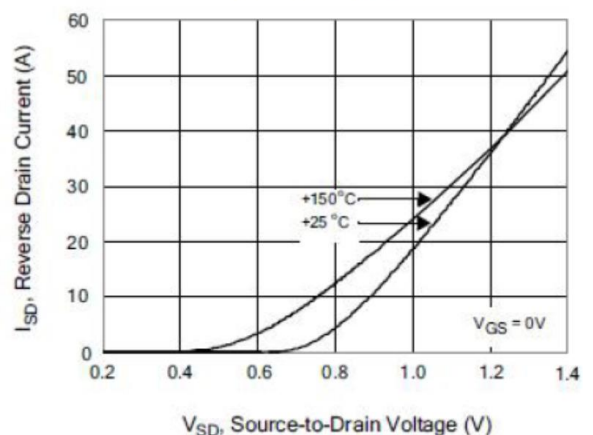


Figure 16. Typical Body Diode Transfer Characteristics

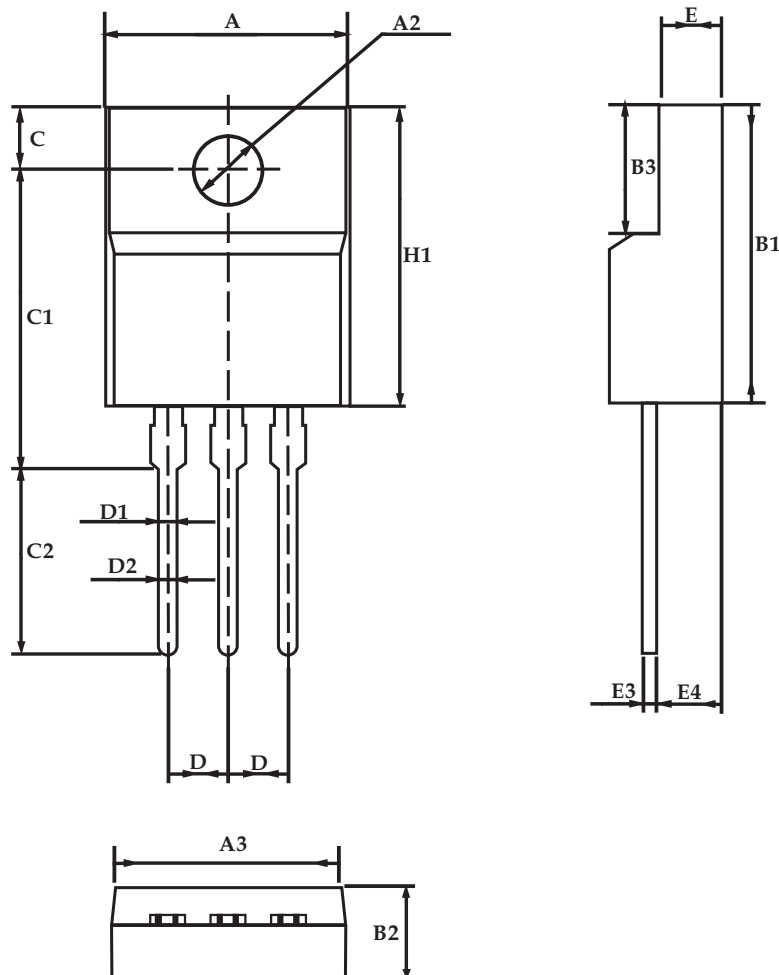




Package Outline

TO-220F
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°	



Ordering information

Device	Package	Shipping
PJM60H07NTF	TO-220F	1000PCS