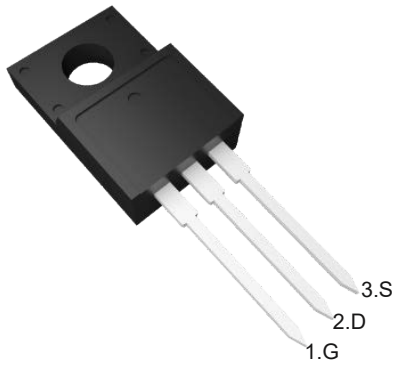
# PJM10H40NTF

## N-Channel Enhancement Mode Power MOSFET

### Features

- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation
- Low gate charge and low $R_{DS(on)}$
- $V_{DS}$= 100V,$I_D$= 40A
  $R_{DS(on)}$< 17mΩ @$V_{GS}$= 10V

**TO-220F**

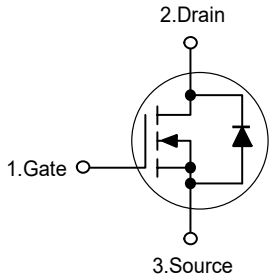



1.Gate 2.Drain 3.Source

### Applications

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

**Schematic diagram**




### Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Drain Current-Continuous | $I_D$ | 40 | A |
| Drain Current-Pulsed Note1 | $I_{DM}$ | 160 | A |
| Single pulse avalanche energy Note4 | $E_{AS}$ | 520 | mJ |
| Maximum Power Dissipation | $P_D$ | 100 | W |
| Junction Temperature | $T_J$ | 175 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 to +175 | °C |

### Thermal Characteristics

| | | | |
|---|---|---|---|
| Maximum Junction-to-Case Note2 | $R_{\theta JC}$ | 0.783 | °C/W |

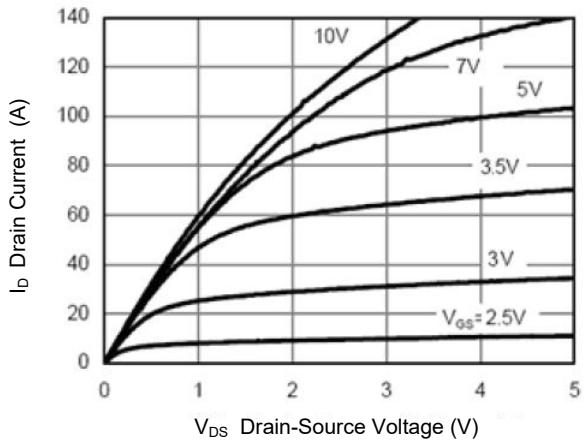
## Electrical Characteristics

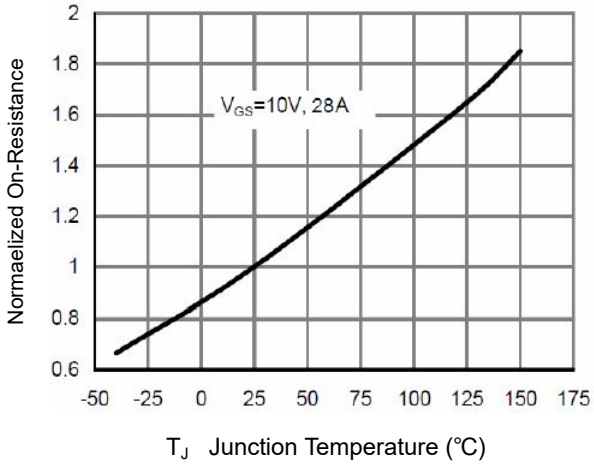
($T_C$=25℃ unless otherwise specified)

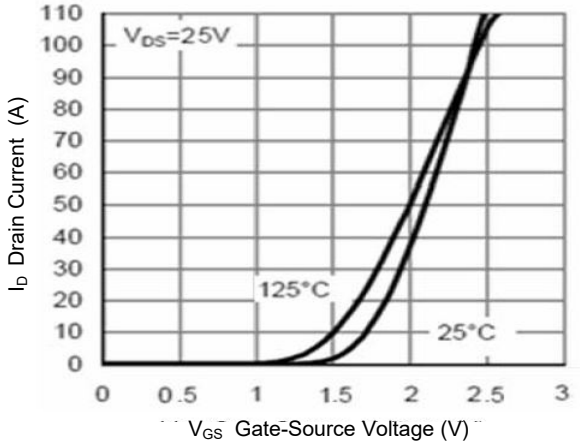
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$=250μA | 100 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V,$V_{GS}$=0V | -- | -- | 0.1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V | -- | -- | ±10 | μA |
| Gate Threshold Voltage Note3 | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1.0 | -- | 2.5 | V |
| Drain-Source On-Resistance Note3 | $R_{DS(on)}$ | $V_{GS}$=10V,$I_D$=20A | -- | 14 | 17 | mΩ |
| Forward Transconductance Note3 | $g_{FS}$ | $V_{DS}$=25V,$I_D$=28A | 32 | -- | -- | S |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=25V,$V_{GS}$=0V,f=1MHz | -- | 1133 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 70 | -- | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 71 | -- | pF |
| **Switching Characteristics** | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=30V, $R_L$=15Ω<br>$I_D$=2A ,$V_{GS}$=10V,$R_G$=2.5Ω | -- | 5 | -- | nS |
| Turn-on Rise Time | $t_r$ | | -- | 4 | -- | nS |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 16 | -- | nS |
| Turn-off Fall Time | $t_f$ | | -- | 5 | -- | nS |
| Total Gate Charge | $Q_g$ | $V_{DD}$=30V,$I_D$=30A, $V_{GS}$=10V | -- | 23 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 5 | -- | nC |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 6.5 | -- | nC |
| **Source-Drain Diode Characteristics** | | | | | | |
| Diode Forward Voltage Note3 | $V_{SD}$ | $V_{GS}$=0V,$I_S$=28A | -- | -- | 1.2 | V |
| Diode Forward Current Note2 | $I_S$ | | -- | -- | 40 | A |

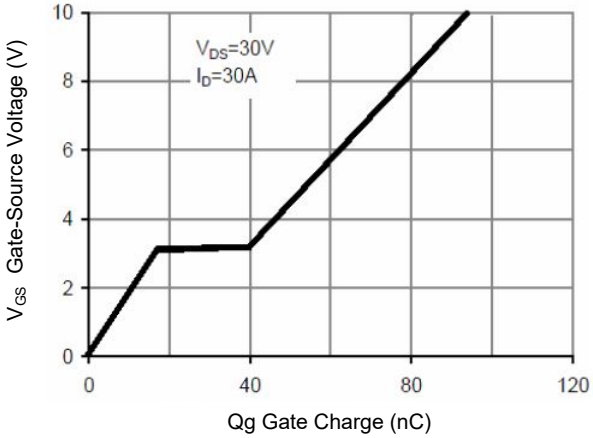
Note: 1. Repetitive Rating: Pulse Width Limited by MaximumJunction Temperature.
2.Surface Mounted on FR4 Board, t ≤ 10 sec.
3.Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4.$E_{AS}$ Condition:$V_{DD}$=50V,$V_{GS}$=10V,L=0.5mH, $R_G$=25Ω, Start $T_J$=25°C.

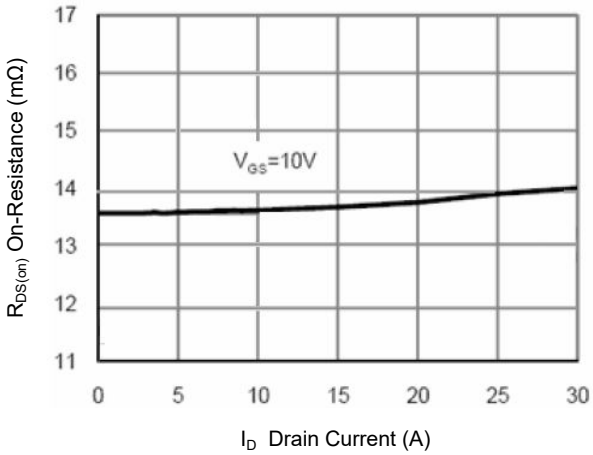
## Typical Characteristic Curves

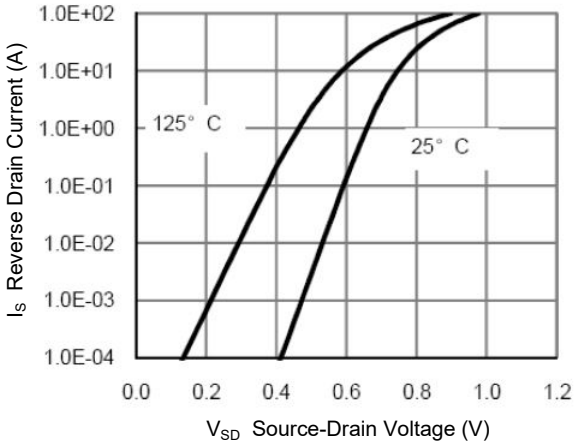


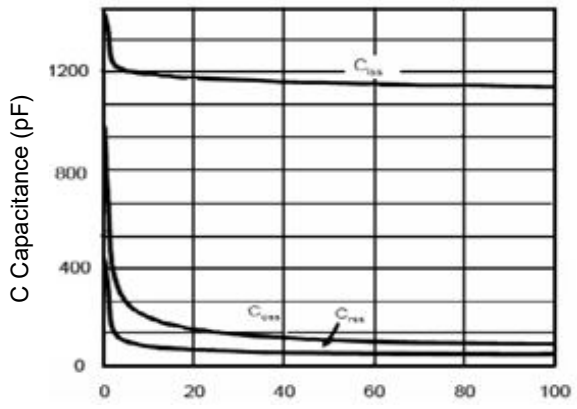



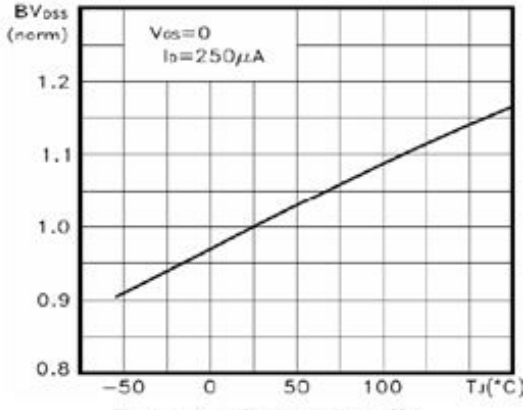



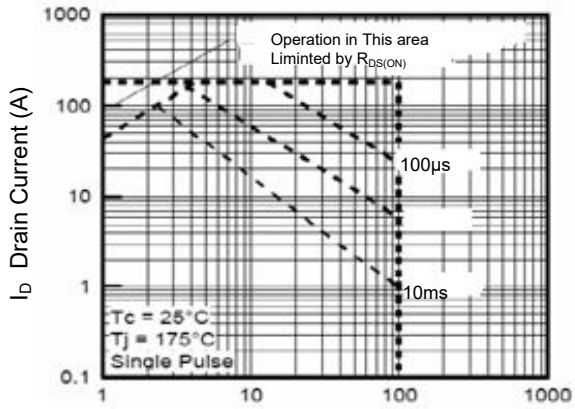






$V_{DS}$ Drain-Source Voltage (V)




$T_J$ Junction Temperature (°C)

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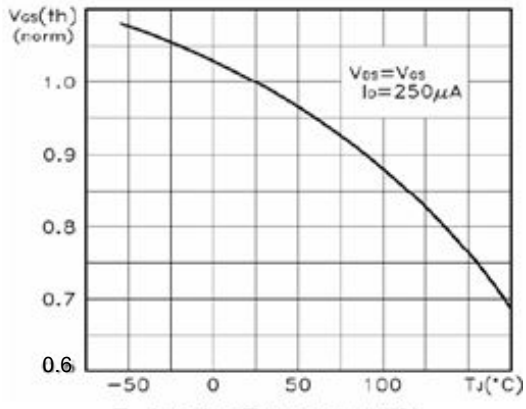


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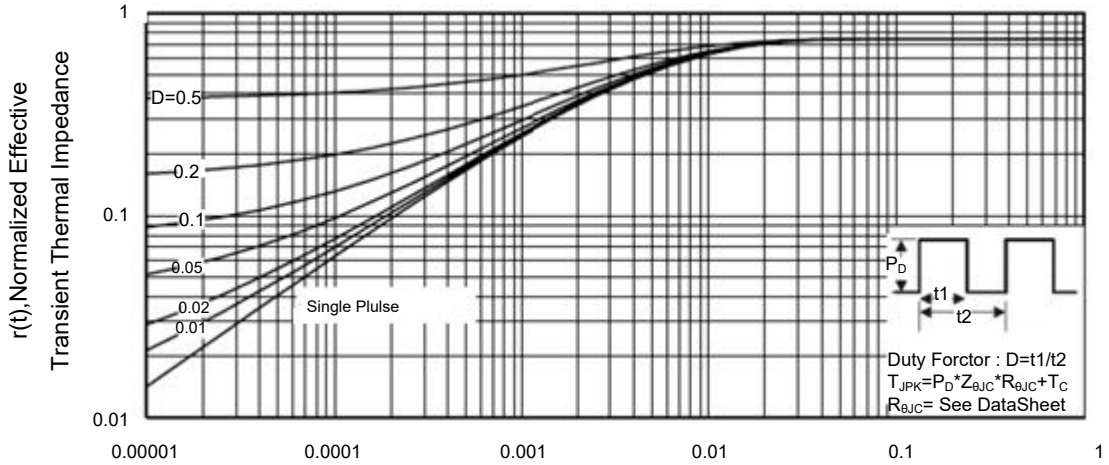
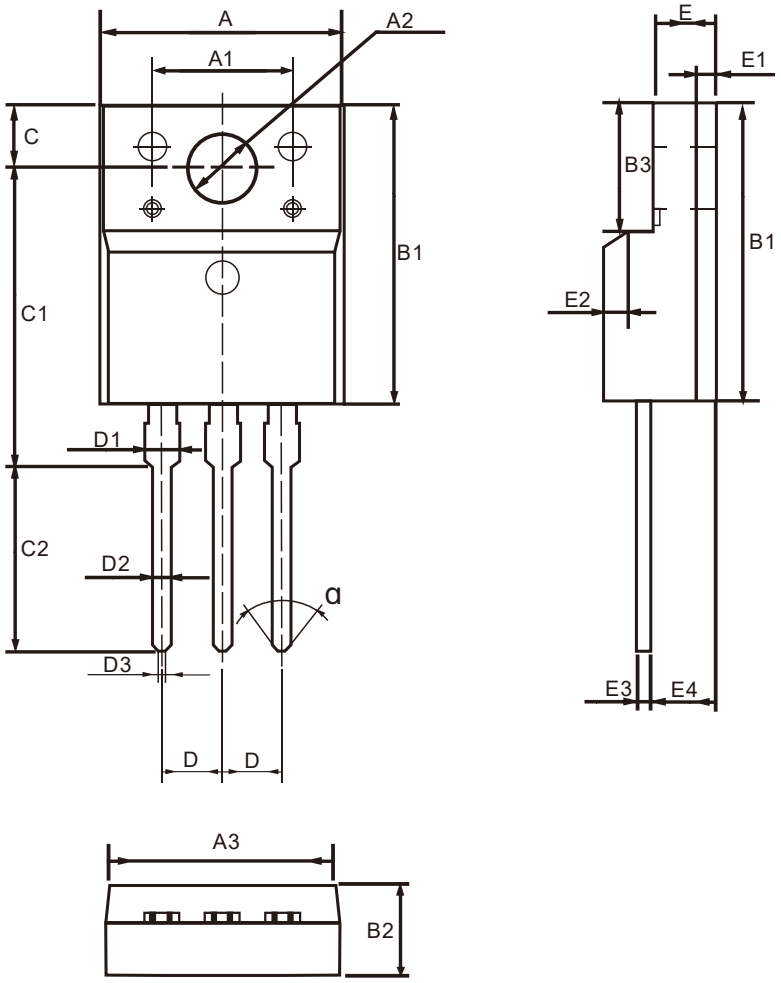



Square Wave Pluse Duration (sec)

**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° | |