

FS30KMJ-3

High-Speed Switching Use
Nch Power MOS FET

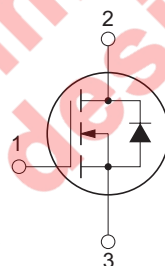
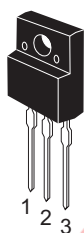
REJ03G1415-0200
(Previous: MEJ02G0080-0101)
Rev.2.00
Aug 07, 2006

Features

- Drive voltage : 4 V
- V_{DSS} : 150 V
- $r_{DS(ON) (max)}$: 86 m Ω
- I_D : 30 A
- Integrated Fast Recovery Diode (TYP.) : 100 ns
- Viso : 2000 V

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



1. Gate
2. Drain
3. Source

Applications

Motor control, Lamp control, Solenoid control, DC-DC converters, etc.

Maximum Ratings

(T_c = 25°C)

| Parameter | Symbol | Ratings | Unit | Conditions |
|----------------------------------|------------------|--------------|------|--------------------------------------|
| Drain-source voltage | V_{DSS} | 150 | V | $V_{GS} = 0$ V |
| Gate-source voltage | V_{GSS} | ± 20 | V | $V_{DS} = 0$ V |
| Drain current | I_D | 30 | A | |
| Drain current (Pulsed) | I_{DM} | 120 | A | |
| Avalanche drain current (Pulsed) | I_{DA} | 30 | A | L = 100 μ H |
| Source current | I_S | 30 | A | |
| Source current (Pulsed) | I_{SM} | 120 | A | |
| Maximum power dissipation | P_D | 30 | W | |
| Channel temperature | T _{ch} | - 55 to +150 | °C | |
| Storage temperature | T _{stg} | - 55 to +150 | °C | |
| Isolation voltage | Viso | 2000 | V | AC for 1 minute, Terminal to case |
| Mass | — | 2.0 | g | Typical value |

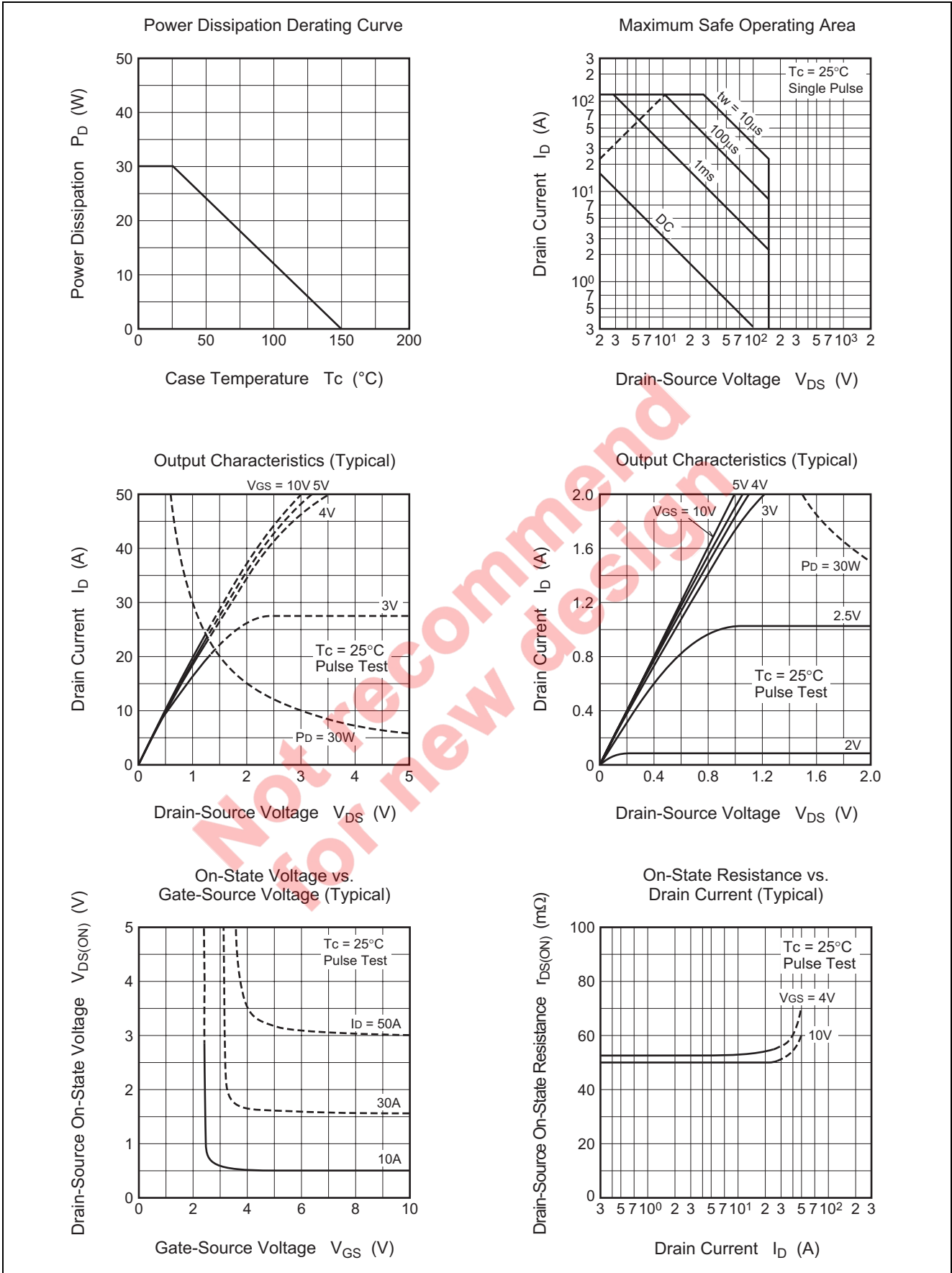
Electrical Characteristics

(T_{ch} = 25°C)

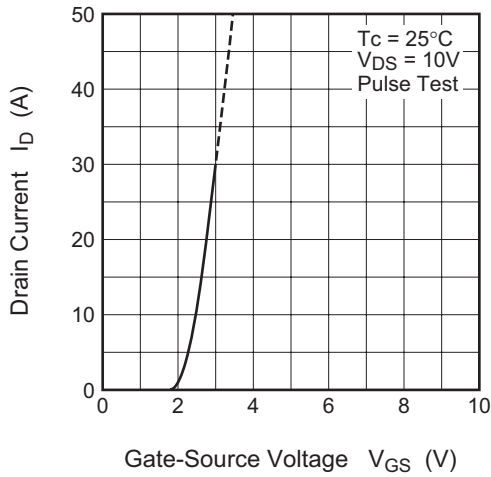
| Parameter | Symbol | Min | Typ | Max | Unit | Test Conditions |
|----------------------------------|-----------------------|-----|------|------|------|--|
| Drain-source breakdown voltage | V _{(BR)DSS} | 150 | — | — | V | I _D = 1 mA, V _{GS} = 0 V |
| Gate-source leakage current | I _{GSS} | — | — | ±0.1 | μA | V _{GS} = ±20 V, V _{DS} = 0 V |
| Drain-source leakage current | I _{DSS} | — | — | 0.1 | mA | V _{DS} = 150 V, V _{GS} = 0 V |
| Gate-source threshold voltage | V _{GS(th)} | 1.0 | 1.5 | 2.0 | V | I _D = 1 mA, V _{DS} = 10 V |
| Drain-source on-state resistance | r _{DS(ON)} | — | 66 | 86 | mΩ | I _D = 15 A, V _{GS} = 10 V |
| Drain-source on-state resistance | r _{DS(ON)} | — | 69 | 90 | mΩ | I _D = 15 A, V _{GS} = 4 V |
| Drain-source on-state voltage | V _{DS(ON)} | — | 0.99 | 1.29 | V | I _D = 15 A, V _{GS} = 10 V |
| Forward transfer admittance | y _{fs} | — | 38 | — | S | I _D = 15 A, V _{DS} = 10 V |
| Input capacitance | C _{iss} | — | 3000 | — | pF | V _{DS} = 10 V, V _{GS} = 0 V, f = 1MHz |
| Output capacitance | C _{oss} | — | 320 | — | pF | |
| Reverse transfer capacitance | C _{rss} | — | 160 | — | pF | |
| Turn-on delay time | t _{d(on)} | — | 22 | — | ns | V _{DD} = 80 V, I _D = 15 A, V _{GS} = 10 V, R _{GEN} = R _{GS} = 50 Ω |
| Rise time | t _r | — | 42 | — | ns | |
| Turn-off delay time | t _{d(off)} | — | 280 | — | ns | |
| Fall time | t _f | — | 130 | — | ns | |
| Source-drain voltage | V _{SD} | — | 1.0 | 1.5 | V | I _S = 15 A, V _{GS} = 0 V |
| Thermal resistance | R _{th(ch-c)} | — | — | 4.17 | °C/W | Channel to case |
| Reverse recovery time | t _{rr} | — | 100 | — | ns | I _S = 30 A, di _S /dt = -100 A/μs |

Not recommended
for new designs

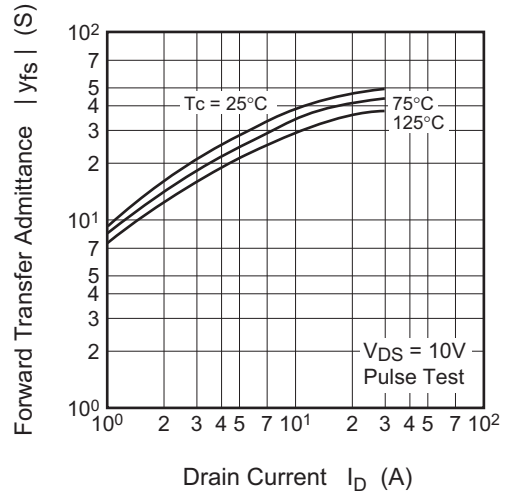
Performance Curves



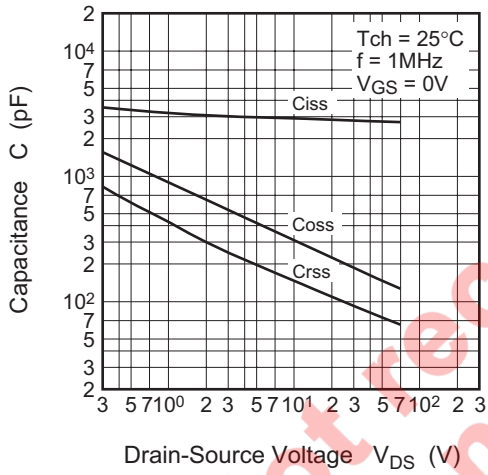
Transfer Characteristics (Typical)



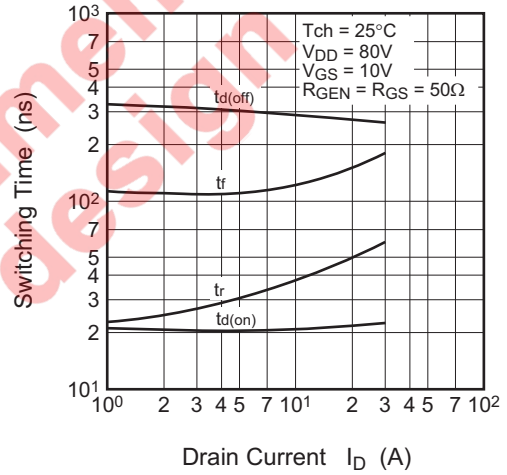
Forward Transfer Admittance vs. Drain Current (Typical)



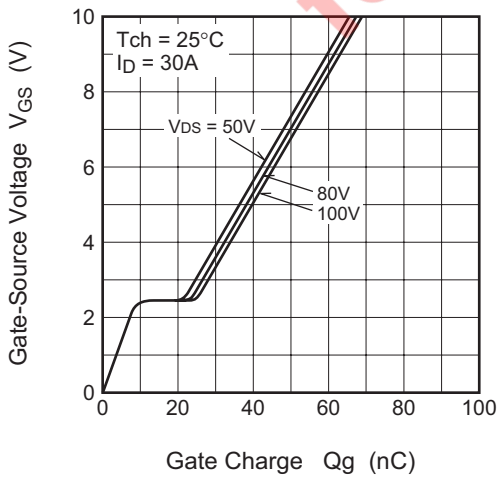
Capacitance vs. Drain-Source Voltage (Typical)



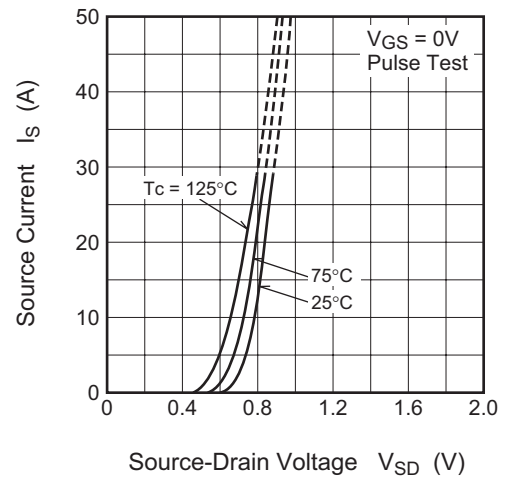
Switching Characteristics (Typical)

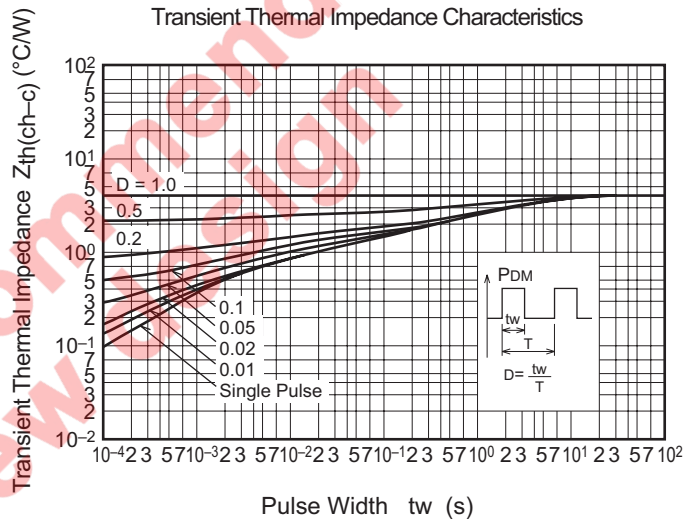
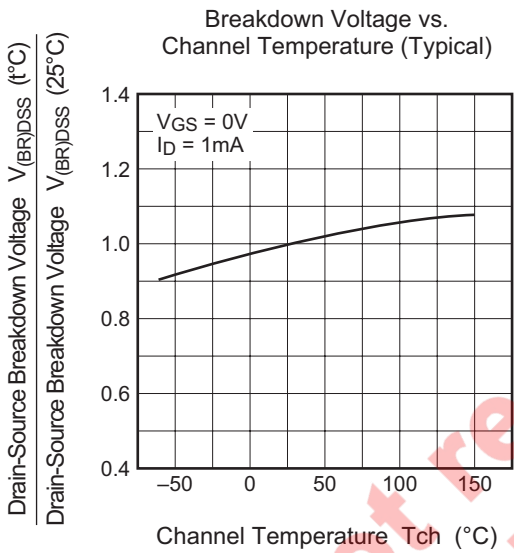
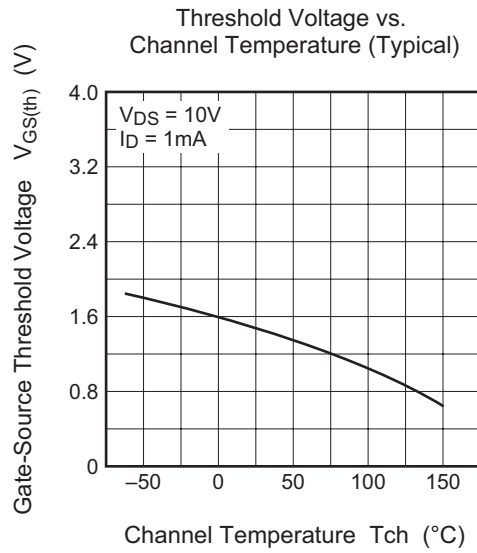
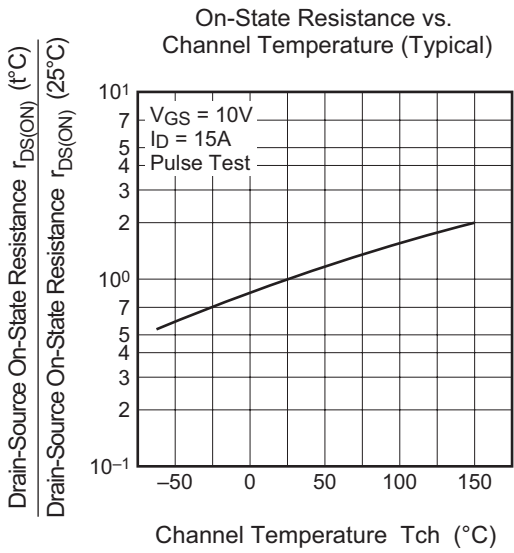


Gate-Source Voltage vs. Gate Charge (Typical)

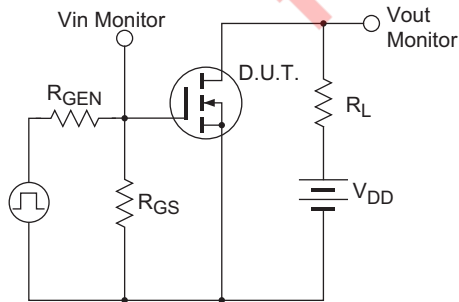


Source-Drain Diode Forward Characteristics (Typical)

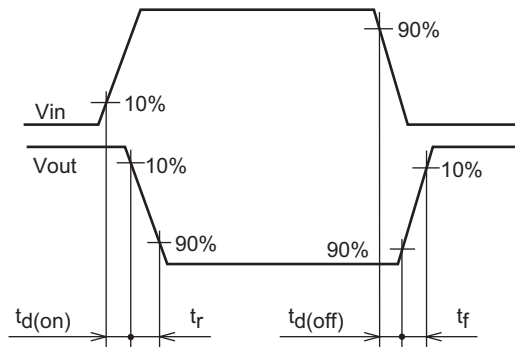




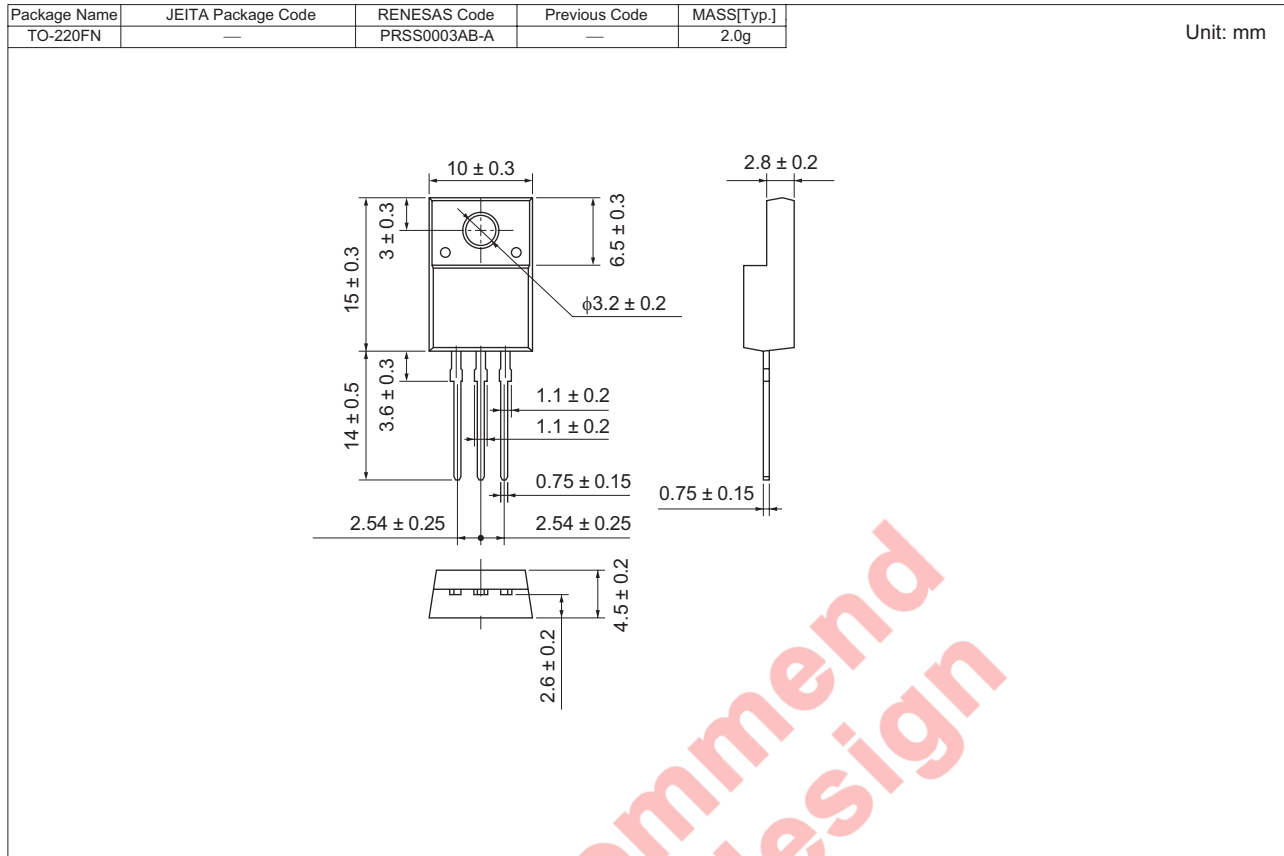
Switching Time Measurement Circuit



Switching Waveform



Package Dimensions



Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|---------------|-------------------------|----------|-------------------------------|-----------------------------|
| Straight type | Plastic Magazine (Tube) | 50 | Type name | FS30KMJ-3 |
| Lead form | Plastic Magazine (Tube) | 50 | Type name – Lead forming code | FS30KMJ-3-A8 |

Note : Please confirm the specification about the shipping in detail.

Keep safety first in your circuit designs!

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