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جهت مشاهده قیمت، موجودی و ثبت سفارش این قطعه به وبسایت توکل الکترونیک مراجعه فرمایید.



مشاهده قیمت و خرید

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## DATA SHEET

NEC

MOS FIELD EFFECT TRANSISTOR  
2SK2275SWITCHING  
N-CHANNEL POWER MOS FET  
INDUSTRIAL USE

## DESCRIPTION

The 2SK2275 is N-channel Power MOS Field Effect Transistor designed for high voltage switching applications.

## FEATURES

- Low On-state Resistance  
 $R_{DS(on)} = 2.8 \Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 2.0 \text{ A)}$
- Low  $C_{iss}$   $C_{iss} = 1\,000 \text{ pF TYP.}$
- High Avalanche Capability Ratings

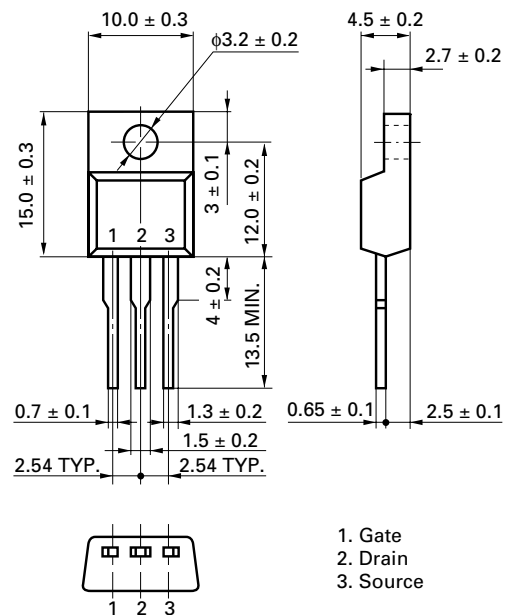
ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

|                                                      |                         |                        |                  |
|------------------------------------------------------|-------------------------|------------------------|------------------|
| Drain to Source Voltage                              | $V_{DSS}$               | 900                    | V                |
| Gate to Source Voltage                               | $V_{GSS}$               | $\pm 30$               | V                |
| Drain Current (DC)                                   | $I_D \text{ (DC)}$      | $\pm 3.5$              | A                |
| Drain Current (pulse)                                | $I_D \text{ (pulse)}^*$ | $\pm 14$               | A                |
| Total Power Dissipation ( $T_c = 25^\circ\text{C}$ ) | $P_{T1}$                | 35                     | W                |
| Total Power Dissipation ( $T_a = 25^\circ\text{C}$ ) | $P_{T2}$                | 2.0                    | W                |
| Storage Temperature                                  | $T_{stg}$               | $-55 \text{ to } +150$ | $^\circ\text{C}$ |
| Channel Temperature                                  | $T_{ch}$                | 150                    | $^\circ\text{C}$ |
| Single Avalanche Current                             | $I_{AS}^{**}$           | 3.5                    | A                |
| Single Avalanche Energy                              | $E_{AS}^{**}$           | 22                     | mJ               |

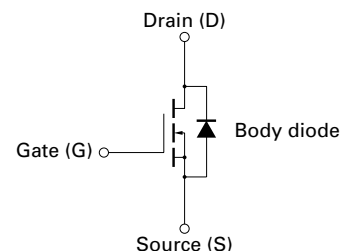
\* $PW \leq 10 \mu\text{s}$ , Duty Cycle  $\leq 1\%$

\*\*Starting  $T_{ch} = 25^\circ\text{C}$ ,  $R_G = 25 \Omega$ ,  $V_{GS} = 20 \text{ V} \rightarrow 0$

The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device is actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

PACKAGE DIMENSIONS  
(in millimeters)

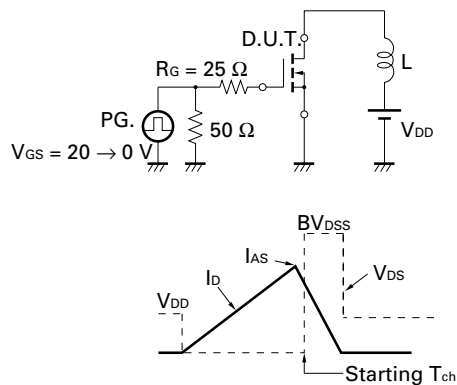
## MP-45F (ISOLATED TO-220)



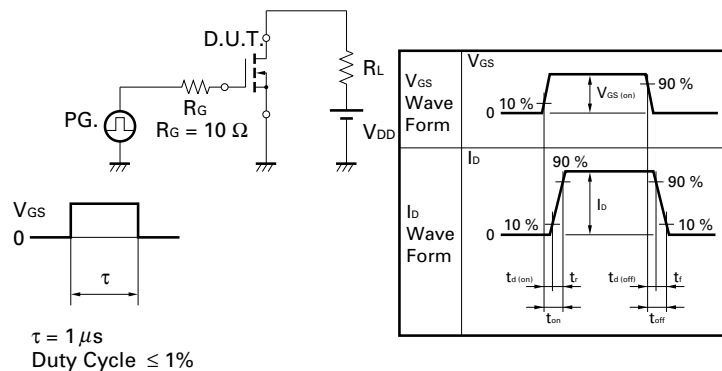
ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)

| CHARACTERISTIC                      | SYMBOL               | MIN. | TYP.  | MAX. | UNIT | TEST CONDITIONS                                                                                                           |
|-------------------------------------|----------------------|------|-------|------|------|---------------------------------------------------------------------------------------------------------------------------|
| Drain to Source On-state Resistance | R <sub>DS(on)</sub>  |      | 2.2   | 2.8  | Ω    | V <sub>GS</sub> = 10 V, I <sub>D</sub> = 2 A                                                                              |
| Gate to Source Cutoff Voltage       | V <sub>GS(off)</sub> | 2.5  |       | 3.5  | V    | V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA                                                                             |
| Forward Transfer Admittance         | y <sub>fs</sub>      | 1.0  |       |      | S    | V <sub>DS</sub> = 20 V, I <sub>D</sub> = 2 A                                                                              |
| Drain Leakage Current               | I <sub>DSS</sub>     |      |       | 100  | μA   | V <sub>DS</sub> = 900 V, V <sub>GS</sub> = 0                                                                              |
| Gate to Source Leakage Current      | I <sub>GSS</sub>     |      |       | ±10  | μA   | V <sub>GS</sub> = ±30 V, V <sub>DS</sub> = 0                                                                              |
| Input Capacitance                   | C <sub>iss</sub>     |      | 1 000 |      | pF   | V <sub>DS</sub> = 10 V<br>V <sub>GS</sub> = 0<br>f = 1 MHz                                                                |
| Output Capacitance                  | C <sub>oss</sub>     |      | 170   |      | pF   |                                                                                                                           |
| Reverse Transfer Capacitance        | C <sub>rss</sub>     |      | 60    |      | pF   |                                                                                                                           |
| Turn-On Delay Time                  | t <sub>d(on)</sub>   |      | 20    |      | ns   | V <sub>GS</sub> = 10 V<br>V <sub>DD</sub> = 150 V<br>I <sub>D</sub> = 2 A, R <sub>G</sub> = 10 Ω<br>R <sub>L</sub> = 75 Ω |
| Rise Time                           | t <sub>r</sub>       |      | 20    |      | ns   |                                                                                                                           |
| Turn-Off Delay Time                 | t <sub>d(off)</sub>  |      | 90    |      | ns   |                                                                                                                           |
| Fall Time                           | t <sub>f</sub>       |      | 20    |      | ns   |                                                                                                                           |
| Total Gate Charge                   | Q <sub>G</sub>       |      | 42    |      | nC   | V <sub>GS</sub> = 10 V<br>I <sub>D</sub> = 3.5 A<br>V <sub>DD</sub> = 450 V                                               |
| Gate to Source Charge               | Q <sub>GS</sub>      |      | 6.0   |      | nC   |                                                                                                                           |
| Gate to Drain Charge                | Q <sub>GD</sub>      |      | 20    |      | nC   |                                                                                                                           |
| Diode Forward Voltage               | V <sub>F(S-D)</sub>  |      | 0.9   |      | V    | I <sub>F</sub> = 3.5 A, V <sub>GS</sub> = 0                                                                               |
| Reverse Recovery Time               | t <sub>rr</sub>      |      | 480   |      | ns   | I <sub>F</sub> = 3.5 A<br>di/dt = 50 A/μs                                                                                 |
| Reverse Recovery Charge             | Q <sub>rr</sub>      |      | 2.5   |      | μC   |                                                                                                                           |

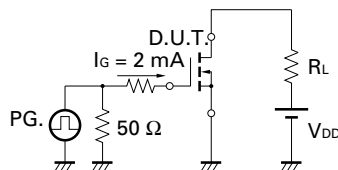
Test Circuit 1: Avalanche Capability



Test Circuit 2: Switching Time

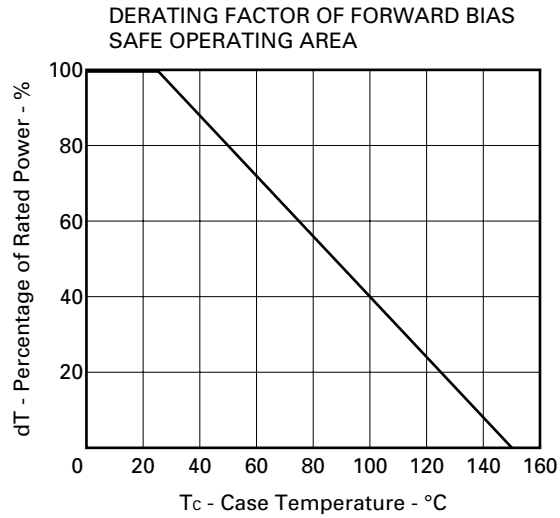
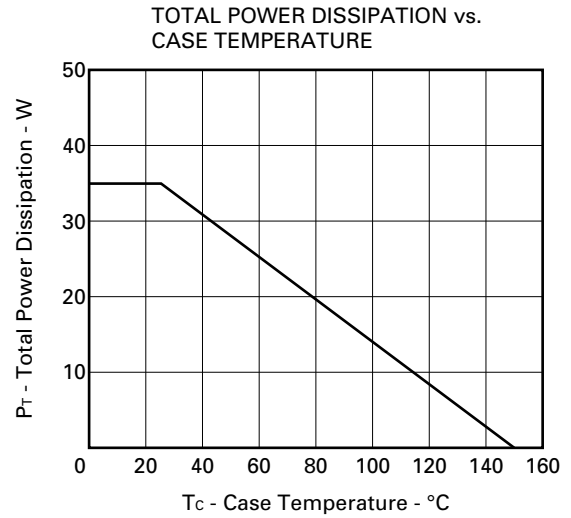
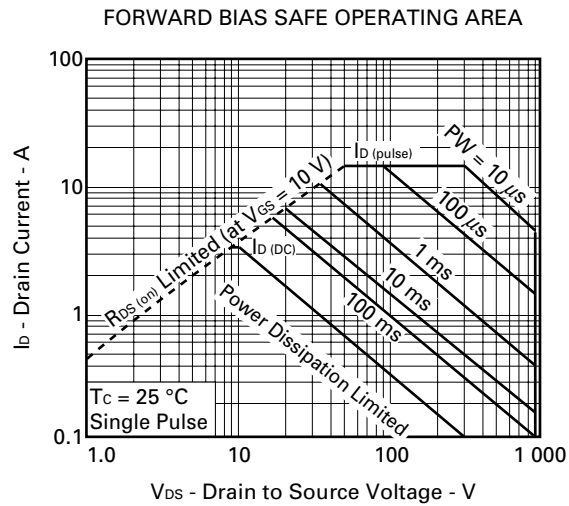
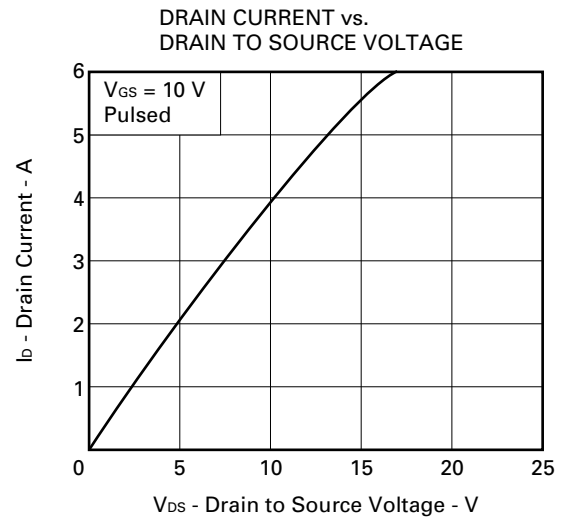
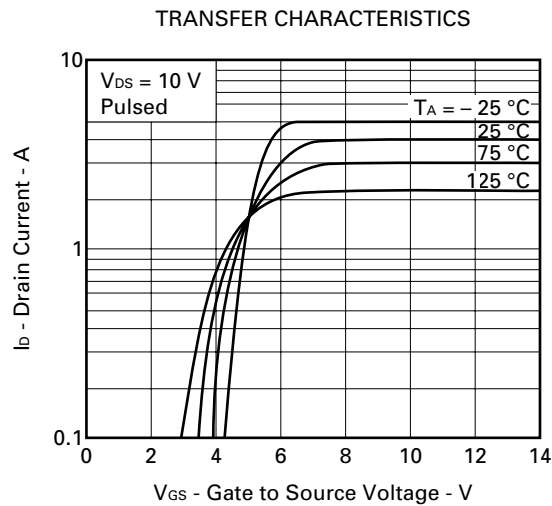


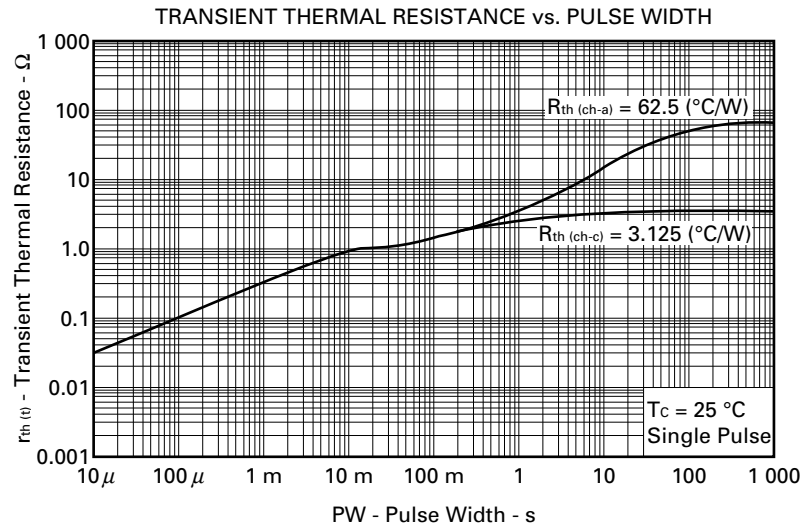
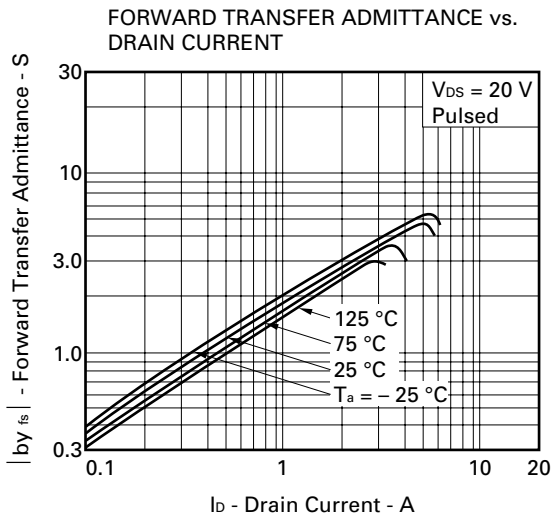
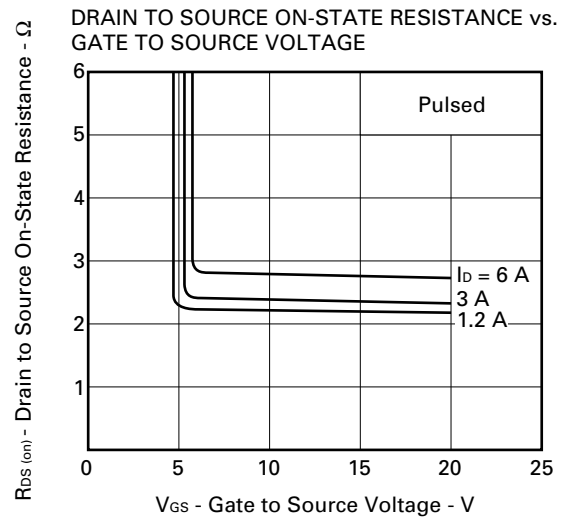
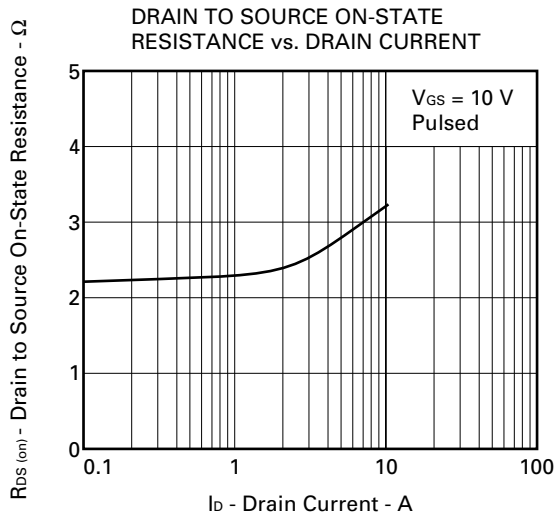
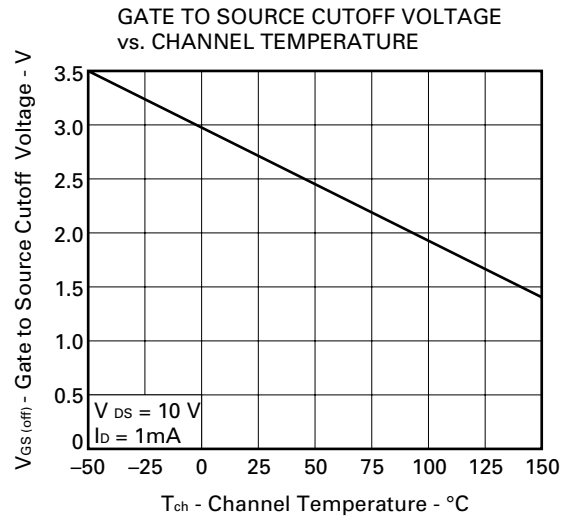
Test Circuit 3: Gate Charge

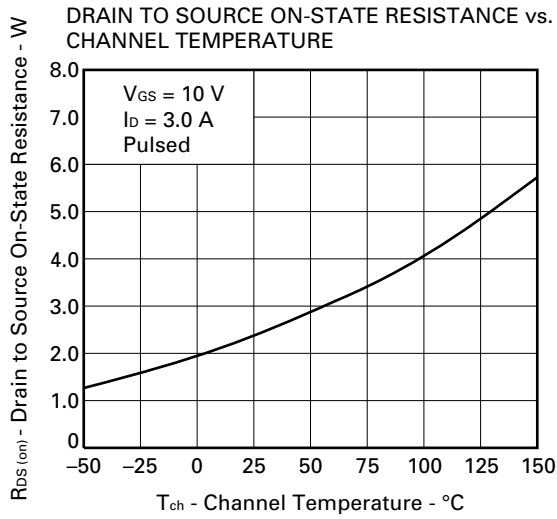
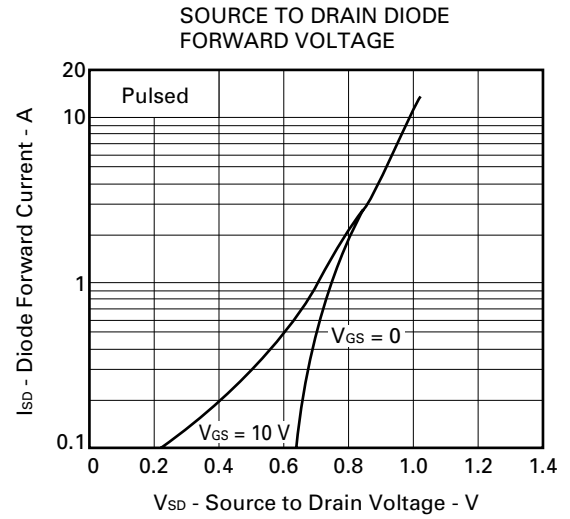
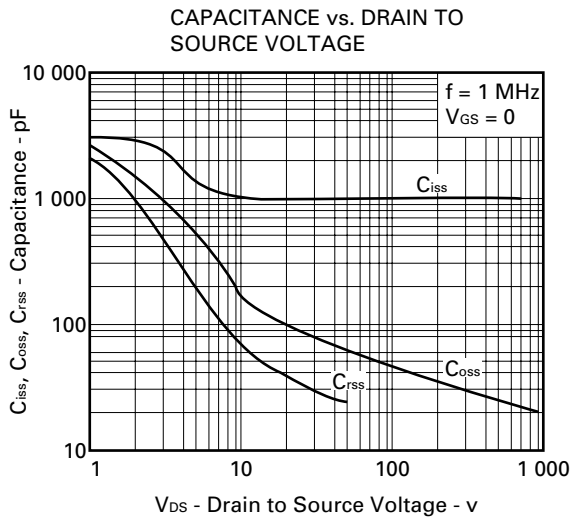
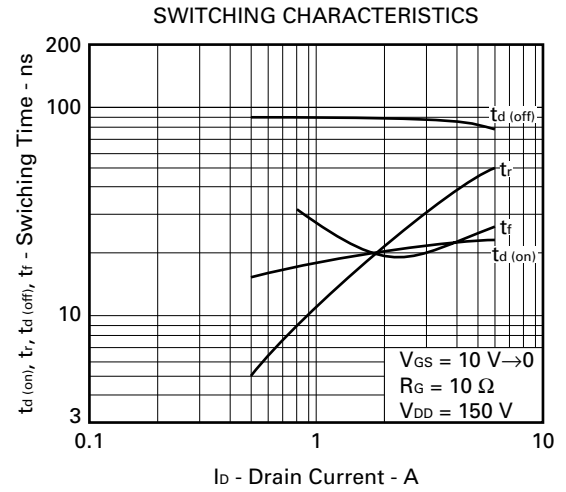
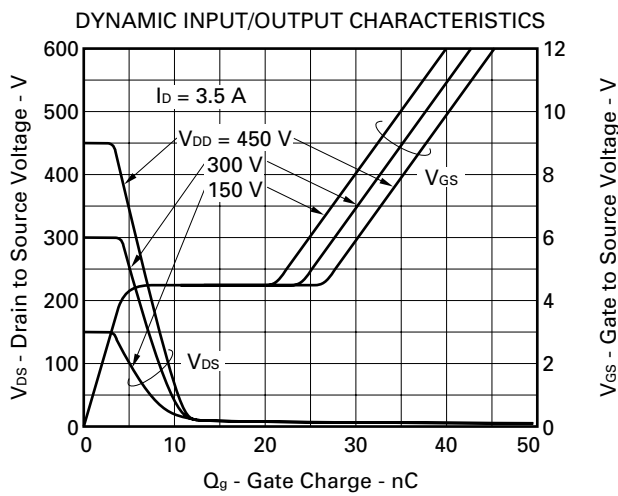
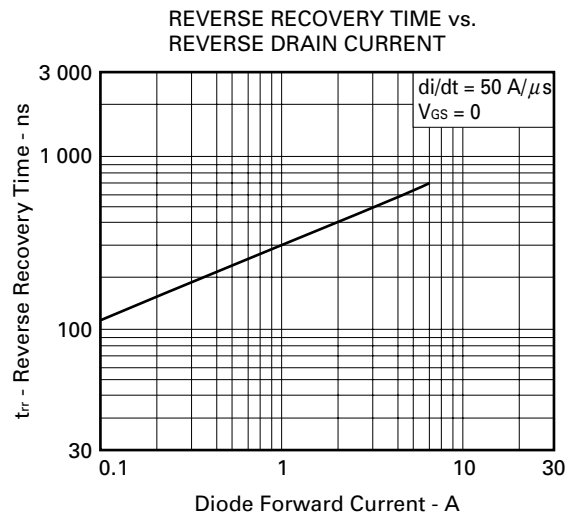


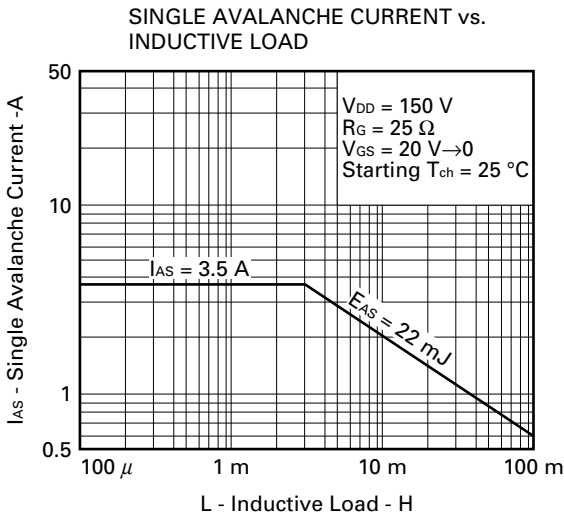
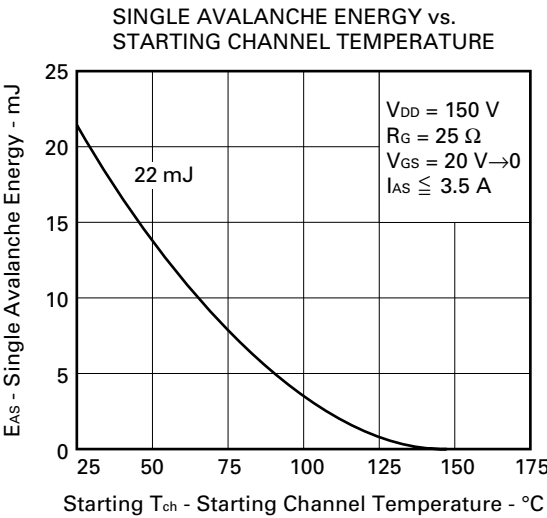
The application circuits and their parameters are for references only and are not intended for use in actual design-in's.

TYPICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ )









## REFERENCE

| Document Name                                                  | Document No. |
|----------------------------------------------------------------|--------------|
| NEC semiconductor device reliability/quality control system.   | TEI-1202     |
| Quality grade on NEC semiconductor devices.                    | IEI-1209     |
| Semiconductor device mounting technology manual.               | IEI-1207     |
| Semiconductor device package manual.                           | IEI-1213     |
| Guide to quality assurance for semiconductor devices.          | MEI-1202     |
| Semiconductor selection guide.                                 | MF-1134      |
| Power MOS FET features and application switching power supply. | TEA-1034     |
| Application circuits using Power MOS FET.                      | TEA-1035     |
| Safe operating area of Power MOS FET.                          | TEA-1037     |

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