



2N80

Power MOSFET

2.4A, 800V N-CHANNEL POWER MOSFET

■ DESCRIPTION

The UTC **2N80** is an N-channel mode power MOSFET using UTC's advanced technology to provide costumers planar stripe and DMOS technology. This technology is specialized in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

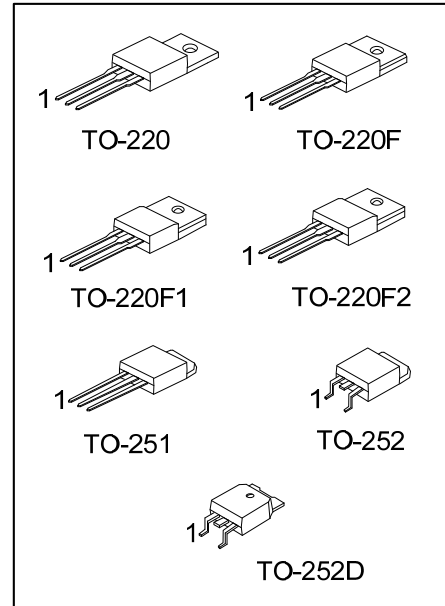
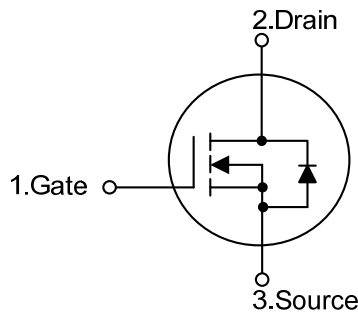
The UTC **2N80** is universally applied in high efficiency switch mode power supply.

■ FEATURES

* $R_{DS(on)} \leq 6.3 \Omega @ V_{GS}=10V, I_D=1.2A$

* High switching speed

■ SYMBOL



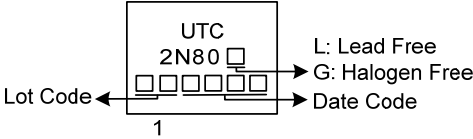
■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|--------------|----------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| 2N80L-TA3-T | 2N80G-TA3-T | TO-220 | G | D | S | Tube |
| 2N80L-TF1-T | 2N80G-TF1-T | TO-220F1 | G | D | S | Tube |
| 2N80L-TF2-T | 2N80G-TF2-T | TO-220F2 | G | D | S | Tube |
| 2N80L-TF3-T | 2N80G-TF3-T | TO-220F | G | D | S | Tube |
| 2N80L-TM3-T | 2N80G-TM3-T | TO-251 | G | D | S | Tube |
| 2N80L-TN3-R | 2N80G-TN3-R | TO-252 | G | D | S | Tape Reel |
| 2N80L-TND-R | 2N80G-TND-R | TO-252D | G | D | S | Tape Reel |

Note: Pin Assignment: G: Gate D: Drain S: Source

| | |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2N80G-TA3-T</p> | <p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2, TF3: TO-220F, TM3: TO-251, TN3: TO-252 TND: TO-252D (3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|------------------------------------|------------------------------|-----------|------------|------------------|
| Drain-Source Voltage | | V_{DSS} | 800 | V |
| Gate-Source Voltage | | V_{GSS} | ± 30 | V |
| Avalanche Current (Note 2) | | I_{AR} | 2.4 | A |
| Drain Current | Continuous | I_D | 2.4 | A |
| | Pulsed (Note 2) | I_{DM} | 4 | A |
| Avalanche Energy | Single Pulsed (Note 3) | E_{AS} | 195 | mJ |
| Peak Diode Recovery dv/dt (Note 4) | | dv/dt | 3.47 | V/ns |
| Power Dissipation | TO-220 | P_D | 85 | W |
| | TO-220F/TO-220F1 TO-220F2 | | 24 | W |
| | TO-251/TO-252 TO-252D | | 44 | W |
| | | | | |
| Junction Temperature | | T_J | +150 | $^\circ\text{C}$ |
| Storage Temperature | | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature

3. $L = 30\text{mH}$, $I_{AS} = 3.4\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\ \Omega$, Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 2.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

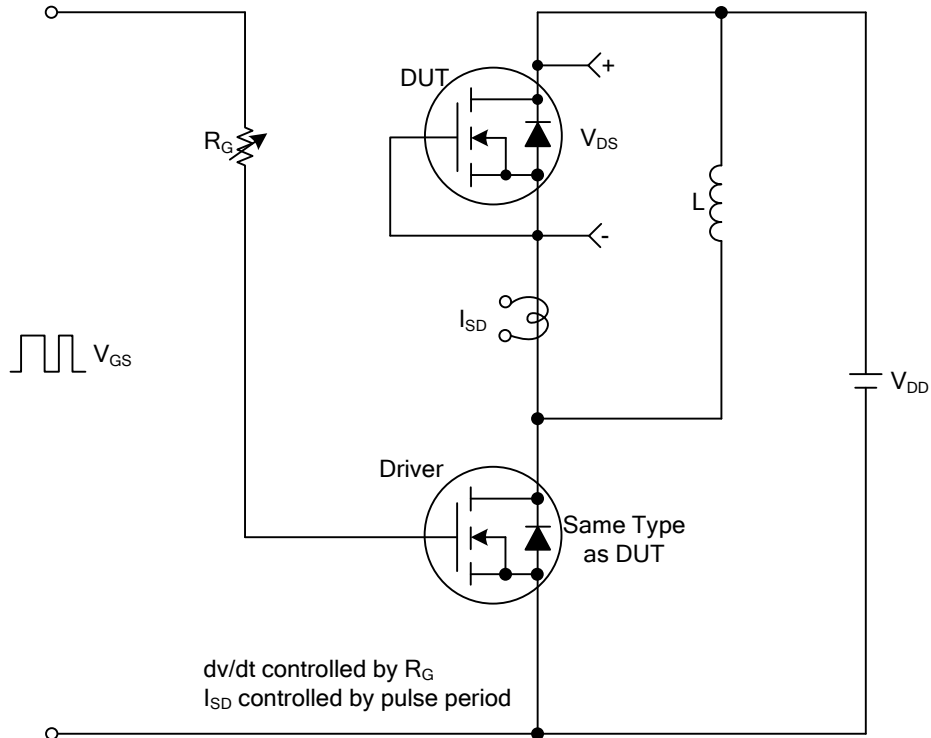
| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|--------------------------------------|---------------|---------|---------------------------|
| Junction to Ambient | TO-220/ TO-220F TO-220F1/TO-220F2 | θ_{JA} | 62.5 | $^\circ\text{C}/\text{W}$ |
| | TO-251/TO-252 TO-252D | | 110 | $^\circ\text{C}/\text{W}$ |
| | | | | |
| Junction to Case | TO-220 | θ_{JC} | 1.47 | $^\circ\text{C}/\text{W}$ |
| | TO-220F/TO-220F1 TO-220F2 | | 5.2 | $^\circ\text{C}/\text{W}$ |
| | TO-251/TO-252 TO-252D | | 2.84 | $^\circ\text{C}/\text{W}$ |
| | | | | |

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

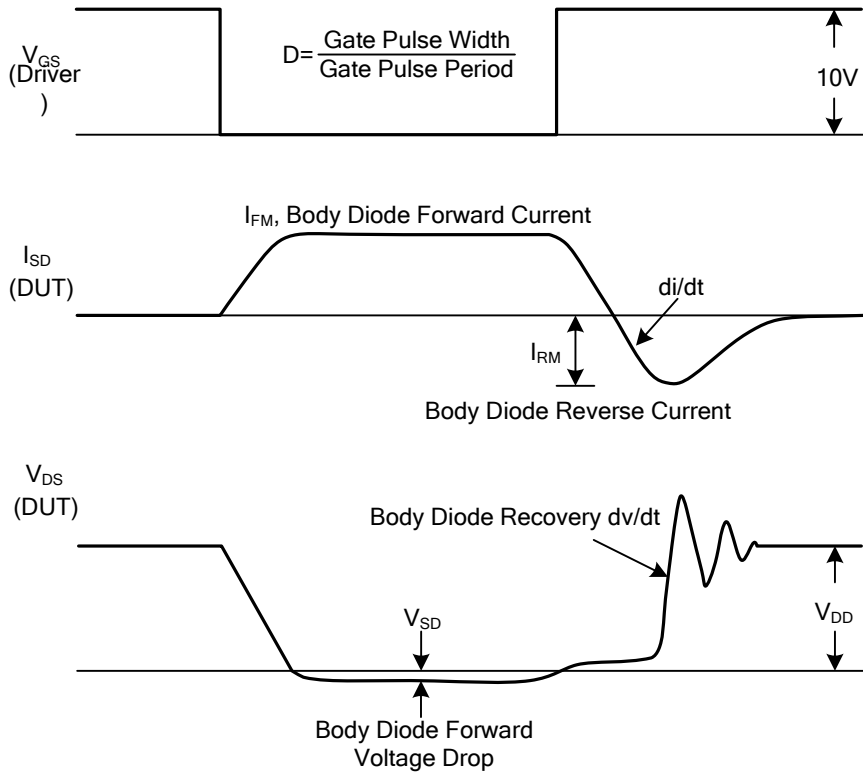
| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------------------------|---------|------------------------------|---------------------------------------------------------------------------------------------|-----|------|------|---------------------------------|
| OFF CHARACTERISTICS | | | | | | | |
| Drain-Source Breakdown Voltage | | BV_{DSS} | $I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$ | 800 | | | V |
| Breakdown Voltage Temperature Coefficient | | $\Delta BV_{DSS}/\Delta T_J$ | Reference to 25°C , $I_D=250\mu\text{A}$ | | 0.9 | | $^\circ\text{V}/^\circ\text{C}$ |
| Drain-Source Leakage Current | | I_{DSS} | $V_{DS}=800\text{V}$, $V_{GS}=0\text{V}$ | | | 10 | μA |
| | | | $V_{DS}=640\text{V}$, $T_C=125^\circ\text{C}$ | | | 100 | |
| Gate- Source Leakage Current | Forward | I_{GSS} | $V_{GS}=+30\text{V}$, $V_{DS}=0\text{V}$ | | | +100 | nA |
| | Reverse | | $V_{GS}=-30\text{V}$, $V_{DS}=0\text{V}$ | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | | |
| Gate Threshold Voltage | | $V_{GS(TH)}$ | $V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$ | 3.0 | | 5.0 | V |
| Static Drain-Source On-State Resistance | | $R_{DS(ON)}$ | $V_{GS}=10\text{V}$, $I_D=1.2\text{A}$ | | 4.8 | 6.3 | Ω |
| Forward Transconductance (Note 1) | | g_{FS} | $V_{DS}=50\text{V}$, $I_D=1.2\text{A}$ | | 2.65 | | S |
| DYNAMIC PARAMETERS | | | | | | | |
| Input Capacitance | | C_{ISS} | $V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$ | | 520 | 650 | pF |
| Output Capacitance | | C_{OSS} | | | 51 | 60 | |
| Reverse Transfer Capacitance | | C_{RSS} | | | 7 | 9 | |
| SWITCHING PARAMETERS | | | | | | | |
| Total Gate Charge | | Q_G | $V_{DS}=640\text{V}$, $V_{GS}=10\text{V}$ $I_D=2\text{A}$, $I_G=1\text{mA}$ (Note 1,2) | | 20 | | nC |
| Gate to Source Charge | | Q_{GS} | | | 7.8 | | |
| Gate to Drain Charge | | Q_{GD} | | | 4.6 | | |
| Turn-ON Delay Time | | $t_{D(ON)}$ | $V_{DD}=100\text{V}$, $V_{GS}=10\text{V}$, $I_D=2\text{A}$, $R_G=25\Omega$ (Note 1,2) | | 8.8 | | ns |
| Rise Time | | t_R | | | 17 | | |
| Turn-OFF Delay Time | | $t_{D(OFF)}$ | | | 42 | | |
| Fall-Time | | t_F | | | 32 | | |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | | I_S | | | | 2.4 | A |
| Maximum Pulsed Drain-Source Diode Forward Current | | I_{SM} | | | | 4 | A |
| Drain-Source Diode Forward Voltage | | V_{SD} | $I_S=2.4\text{A}$, $V_{GS}=0\text{V}$ | | | 1.4 | V |
| Reverse Recovery Time (Note 1) | | t_{rr} | $I_S=2.0\text{A}$, $V_{GS}=0\text{V}$, | | 367 | | ns |
| Reverse Recovery Charge (Note 1) | | Q_{rr} | $di_F/dt=100\text{A}/\mu\text{s}$ | | 5 | | |

Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature

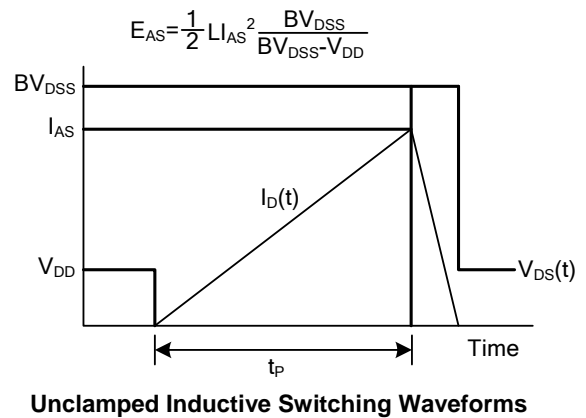
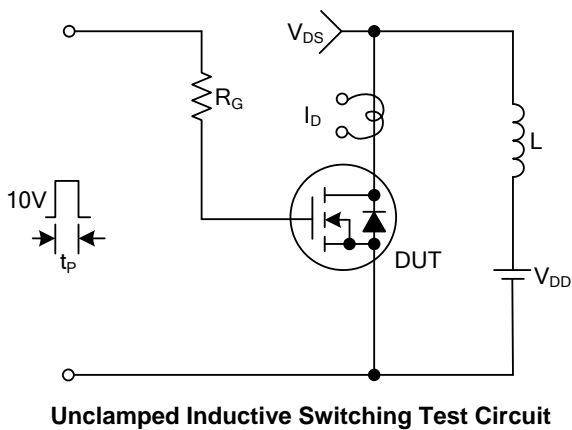
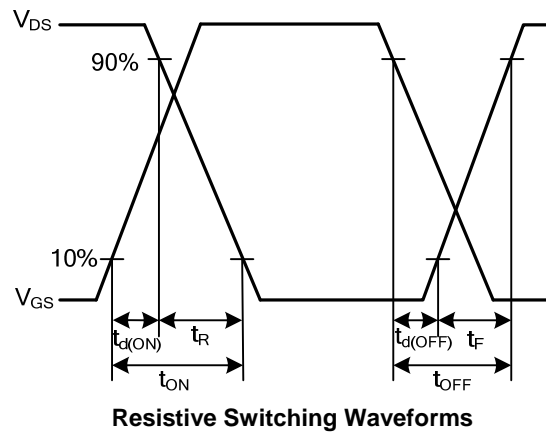
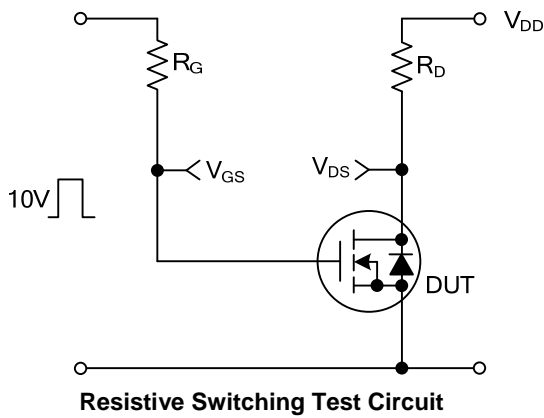
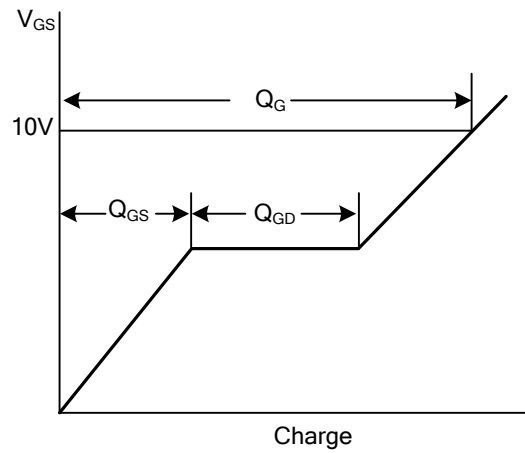
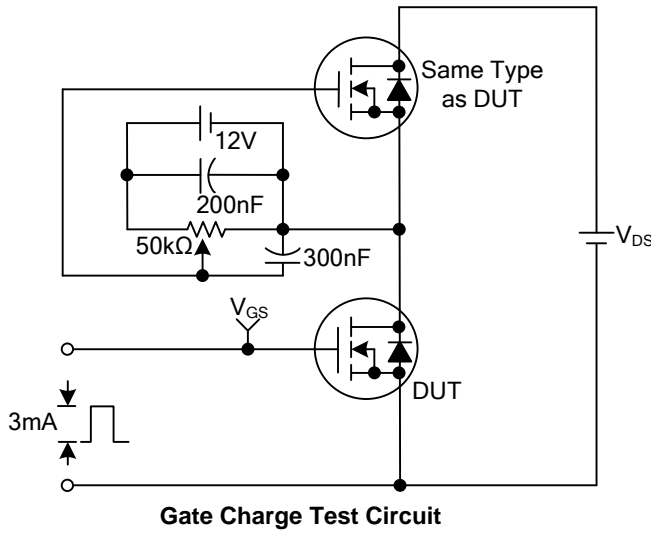
■ TEST CIRCUITS AND WAVEFORMS



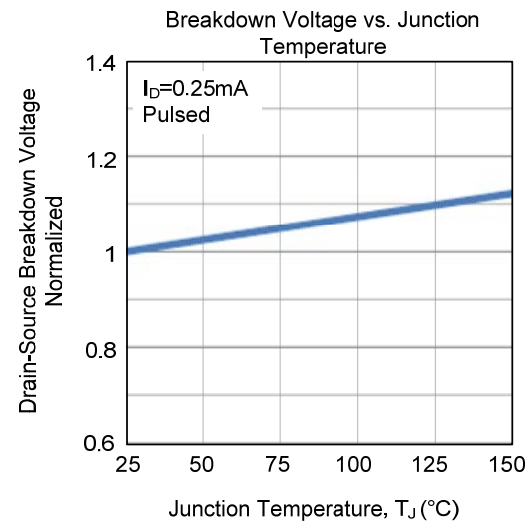
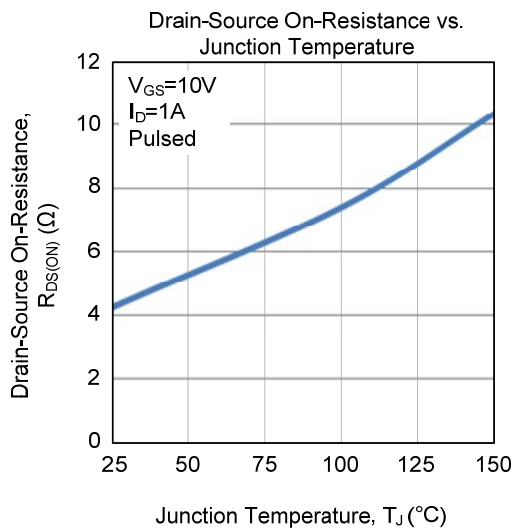
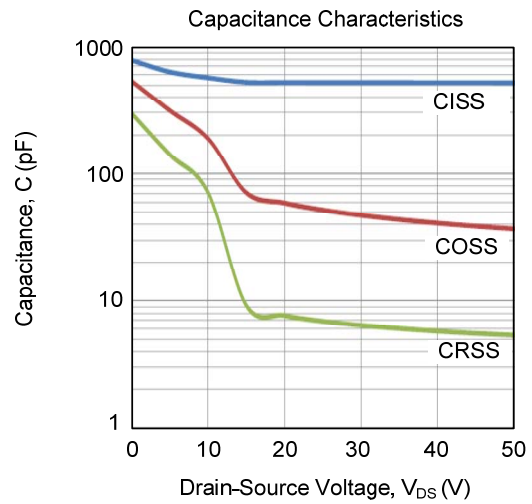
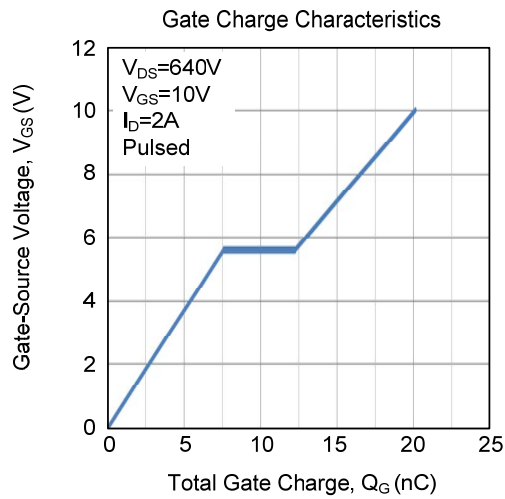
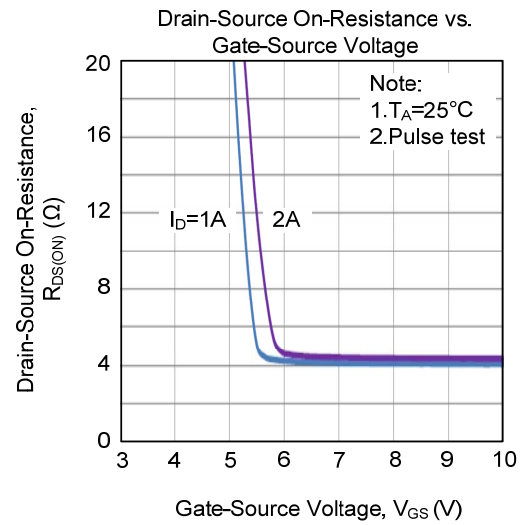
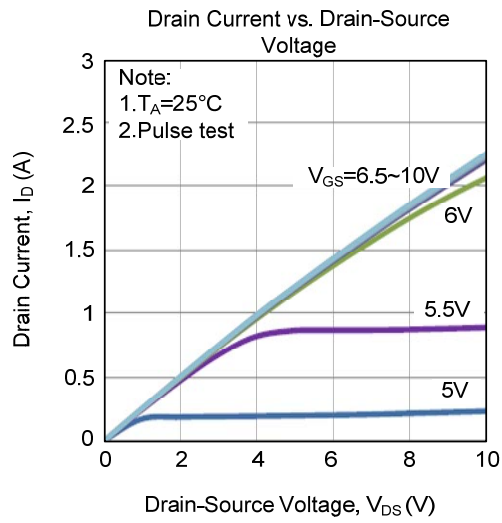
Peak Diode Recovery dv/dt Test Circuit & Waveforms



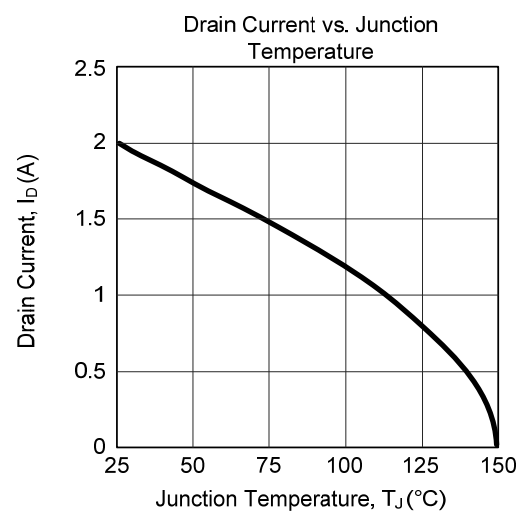
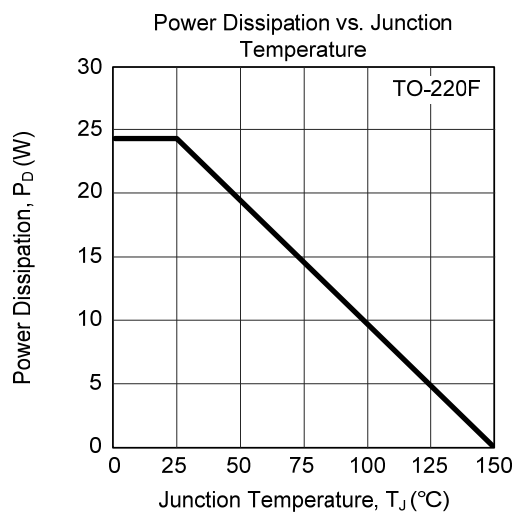
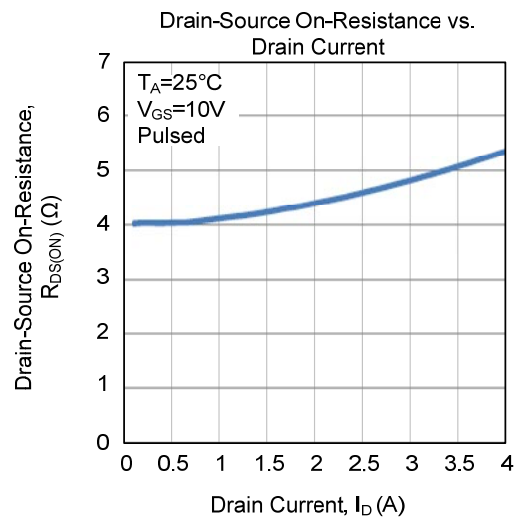
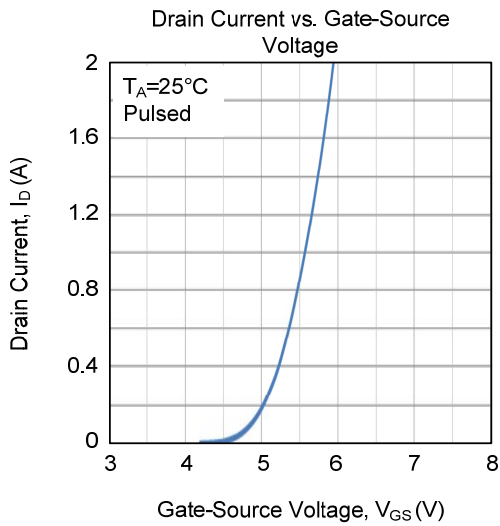
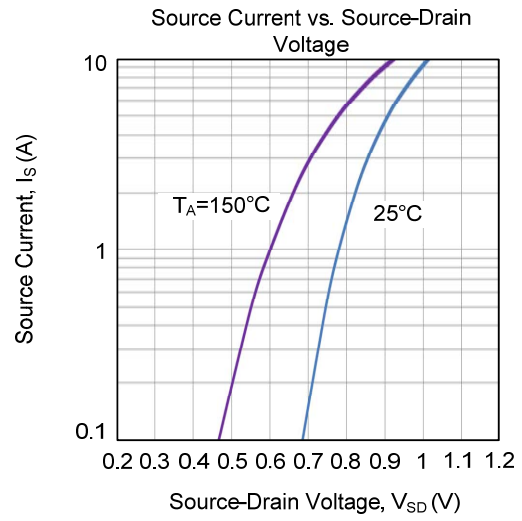
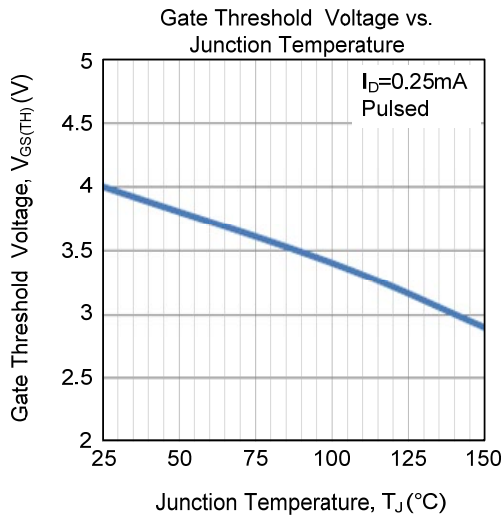
TEST CIRCUITS AND WAVEFORMS



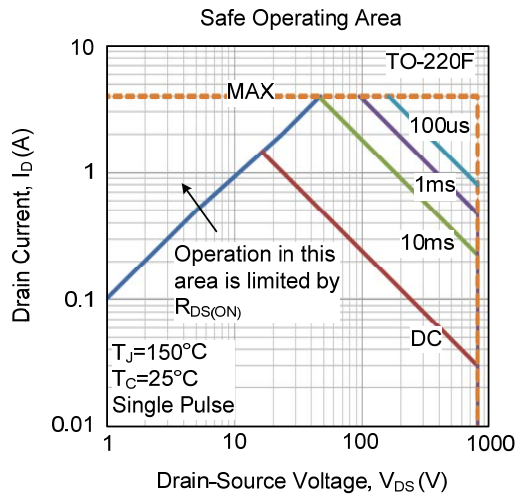
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Unisonic](#) manufacturer:

Other Similar products are found below :

[IRFD120](#) [JANTX2N5237](#) [BUK455-60A/B](#) [MIC4420CM-TR](#) [VN1206L](#) [NDP4060](#) [SI4482DY](#) [IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#)
[TK16J60W,S1VQ\(O](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#) [DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [DMC2700UDMQ-7](#)
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [DMP22D4UFO-7B](#) [DMN1006UCA6-7](#) [DMN16M9UCA6-7](#)
[STF5N65M6](#) [IRF40H233XTMA1](#) [STU5N65M6](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [DMTH10H4M6SPS-13](#) [DMN2990UFB-7B](#)
[IPB80P04P405ATMA2](#) [2N7002W-G](#) [MCAC30N06Y-TP](#) [MCQ7328-TP](#) [NTMC083NP10M5L](#) [BXP7N65D](#) [BXP4N65F](#) [AOL1454G](#)
[WMJ80N60C4](#) [BXP2N20L](#) [BXP2N65D](#) [BXT1150N10J](#) [BXT1700P06M](#) [TSM60NB380CP](#) [ROG](#) [RQ7L055BGTGR](#) [DMNH15H110SK3-13](#)
[SLF10N65ABV2](#) [BSO203SP](#) [BSO211P](#) [IPA60R230P6](#)