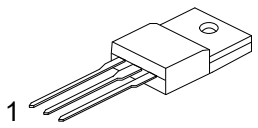
USG12R080HF

Power MOSFET

N-CHANNEL SGT ENHANCEMENT POWER MOSFET



TO-220F1

■ DESCRIPTION

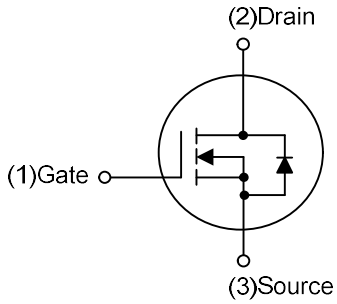
The UTC **USG12R080HF** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge, etc.

The UTC **USG12R080HF** applies to primary side switch, synchronous rectifier, Motor Drives, etc.

■ FEATURES

* $R_{DS(ON)} \leq 8.0\ m\Omega$ @ V_{GS} = 10V, I_D = 100A
* Extremely low switching loss
* Excellent stability and uniformity
* Green Product

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USG12R080HFL-TF1-T	USG12R080HFG-TF1-T	TO-220F1	G	D	S	Tube

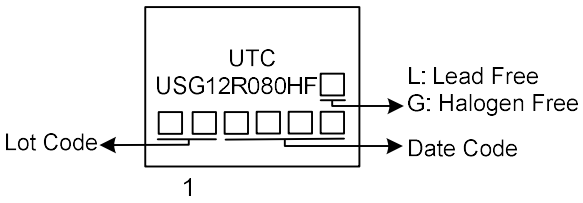
Note: Pin Assignment: G: Gate D: Drain S: Source

USG12R080HFG-TF1-T

(1)Packing Type	(1) T: Tube
(2)Package Type	(2) TF1: TO-220F1
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

Copyright © 2026 Unisonic Technologies Co., Ltd

■ MARKING


UTC
USG12R080HF
L: Lead Free
G: Halogen Free
Lot Code
Date Code
1

■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	120	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	100	A
	Pulsed (Note 2)	I_{DM}	200	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	48.4	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	5	V/ns
Power Dissipation		P_D	44	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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 = 0.1mH, I_{AS} = 31.1A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ T_{JMAX}, T_J = 25°C.

■ THERMAL DATA

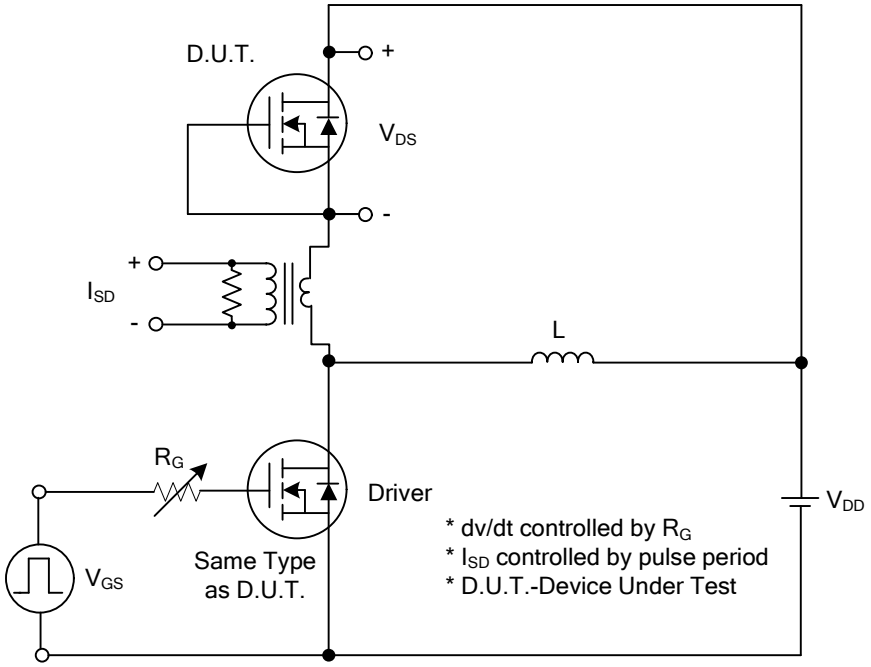
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	2.84	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

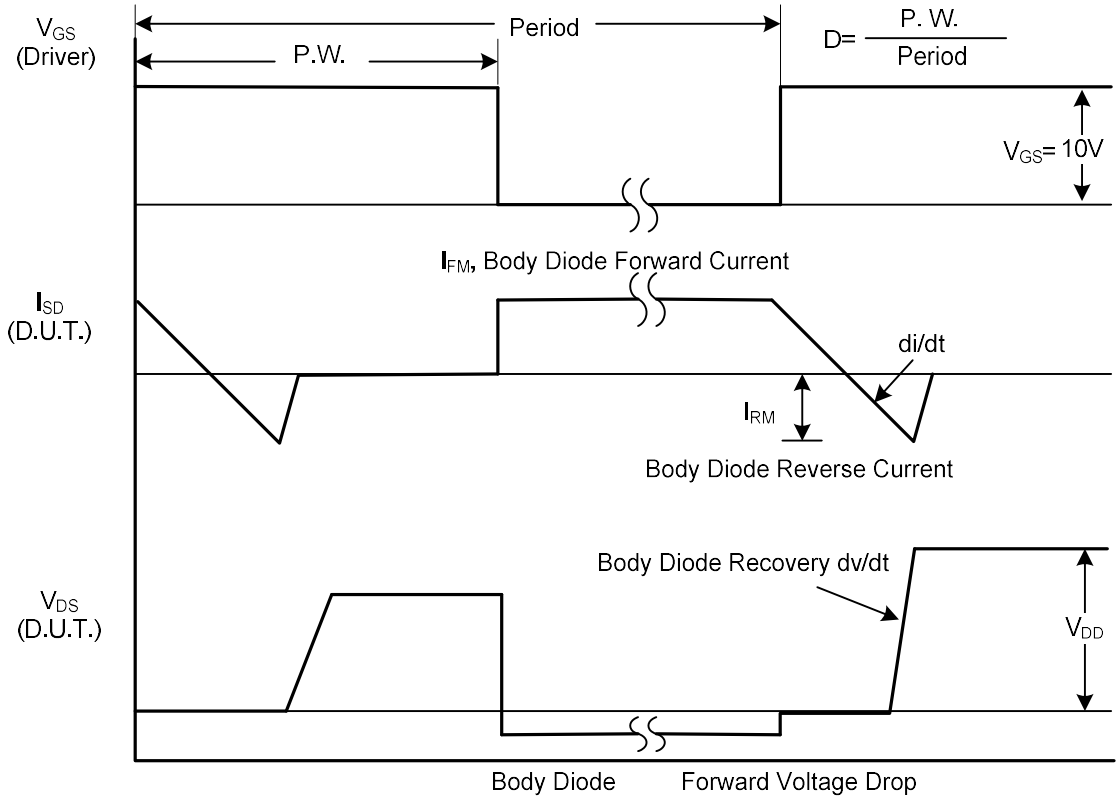
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	120			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=120V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS} =10V, I_D=100A			8.0	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		4485		pF
Output Capacitance		C_{OSS}			989		pF
Reverse Transfer Capacitance		C_{RSS}			83		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS}=96V, V_{GS}=10V, I_D=100A (Note 1, 2)		143		nC
Gate to Source Charge		Q_{GS}			30		nC
Gate to Drain Charge		Q_{GD}			28		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=60V, V_{GS}=10V, I_D=100A, R_G=3Ω (Note 1, 2)		20		ns
Rise Time		t_R			20		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			48		ns
Fall-Time		t_F			20		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S				100	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}				200	A
Diode Forward Voltage		V_{SD}	I_F=100A, V_{GS}=0V			1.4	V
Reverse Recovery Time (Note 1)		t_{rr}	I_S=30A, V_{GS}=0V, dI_F/dt =100A/μs		75		nS
Reverse Recovery Charge		Q_{rr}			166		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

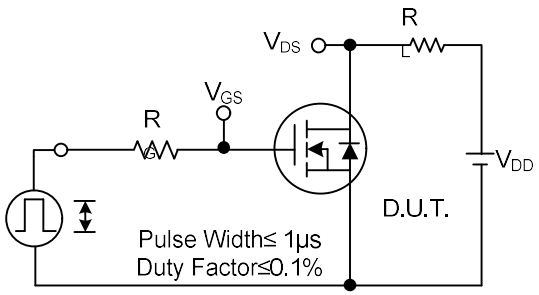


Peak Diode Recovery dv/dt Test Circuit

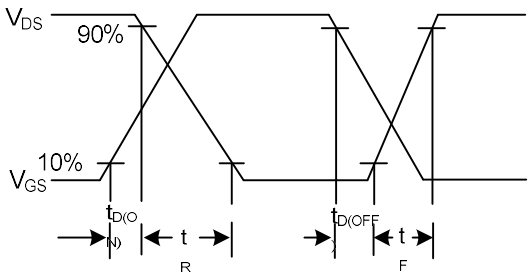


Peak Diode Recovery dv/dt Waveforms

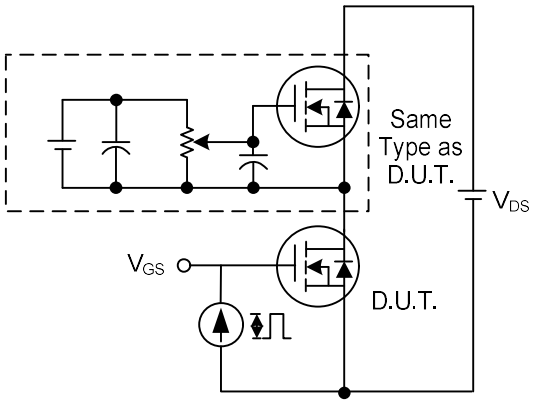
■ TEST CIRCUITS AND WAVEFORMS



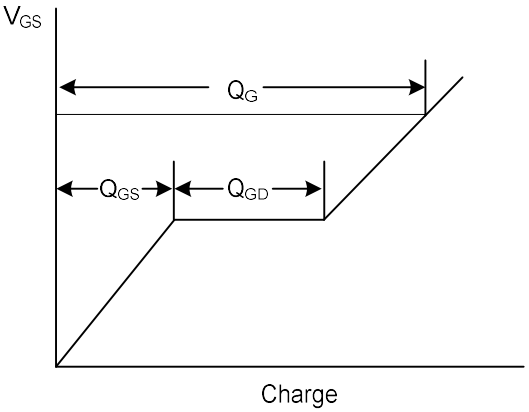
Switching Test Circuit



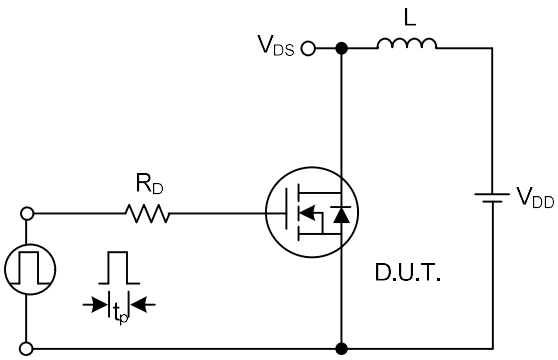
Switching Waveforms



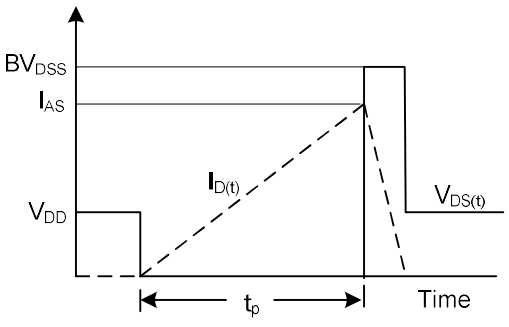
Gate Charge Test Circuit



Gate Charge Waveform

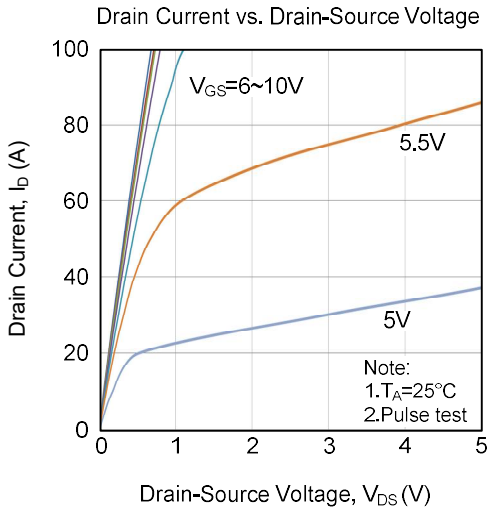


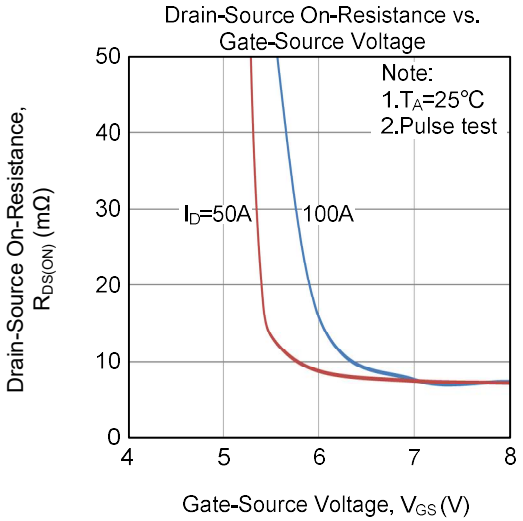
Unclamped Inductive Switching Test Circuit

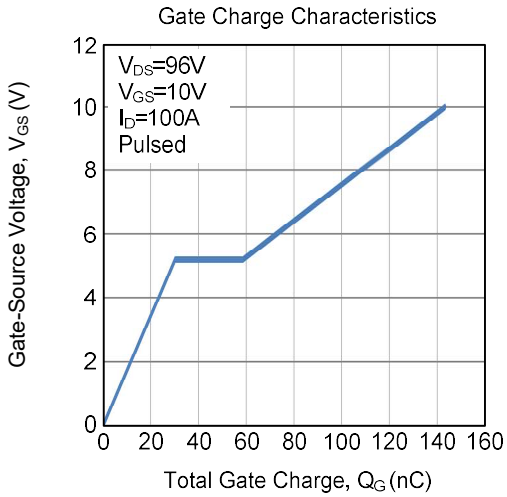


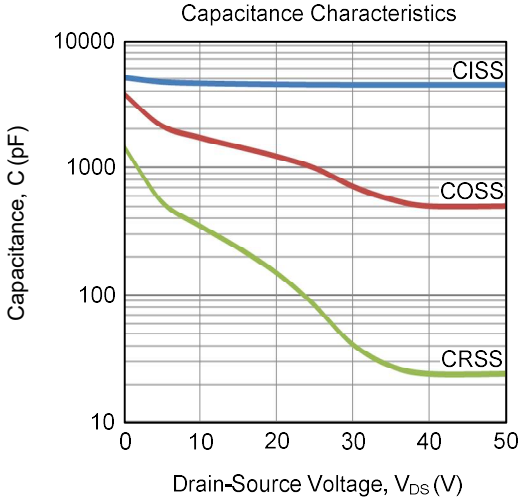
Unclamped Inductive Switching Waveforms

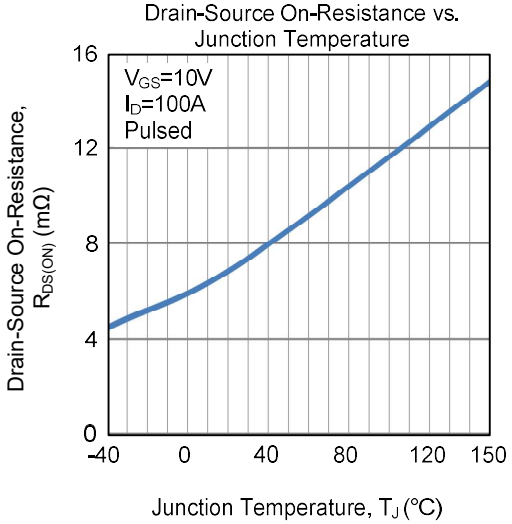
■ TYPICAL CHARACTERISTICS

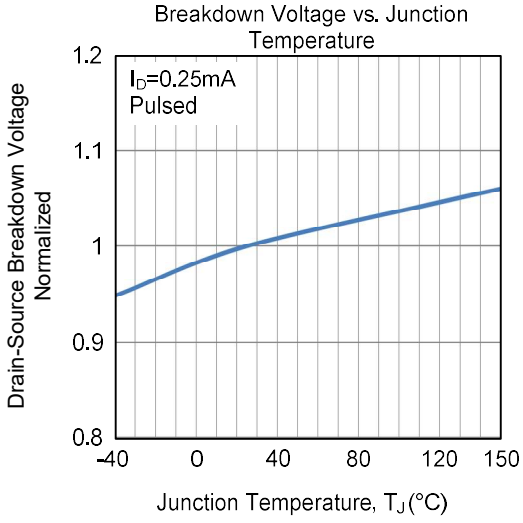




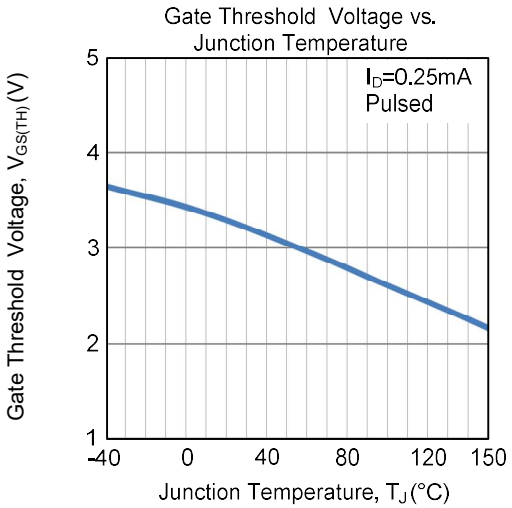


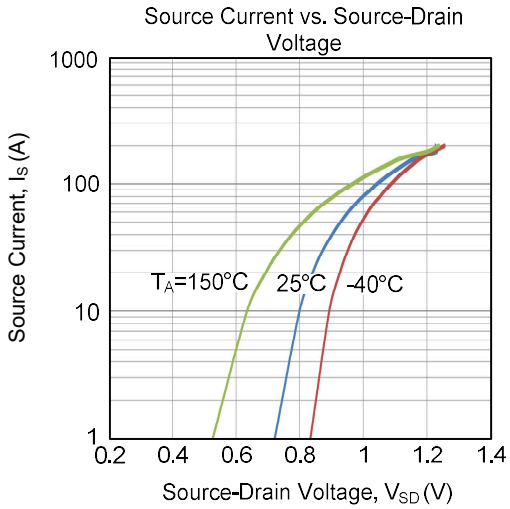


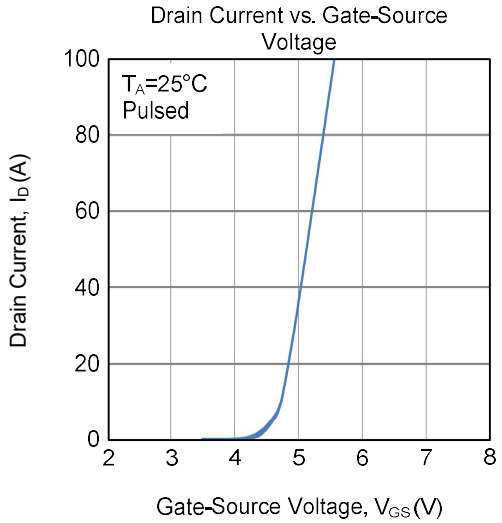


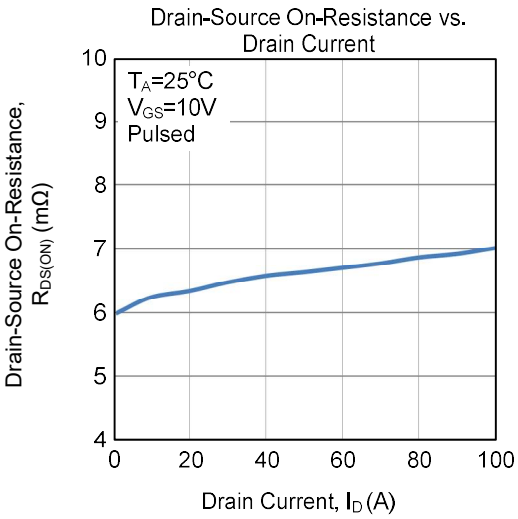


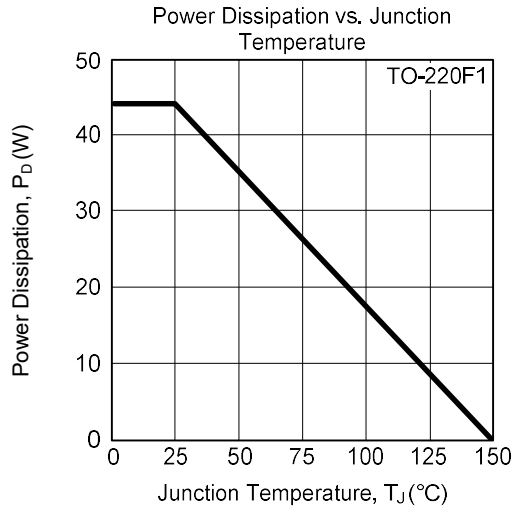
■ TYPICAL CHARACTERISTICS

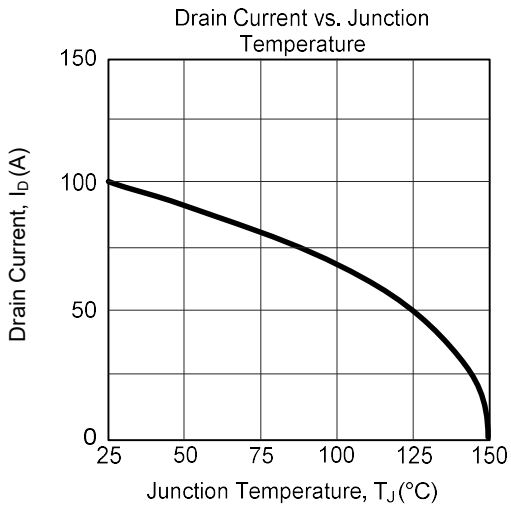




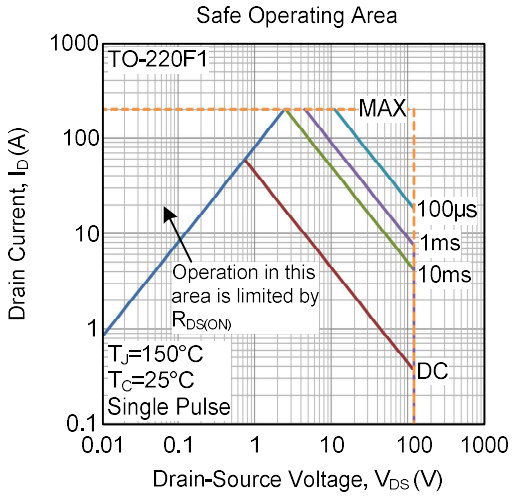








■ TYPICAL CHARACTERISTICS



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.