



UTT20N06

Power MOSFET

20A, 60V N-CHANNEL POWER MOSFET

DESCRIPTION

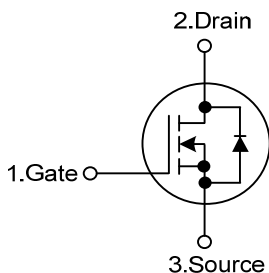
The UTC **UTT20N06** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The UTC **UTT20N06** is universally applied in low voltage, such as automotive, high efficiency switching for DC/DC converters and DC motor control.

FEATURES

- * $R_{DS(ON)} < 46m\Omega$ @ $V_{GS}=10V, I_D=20A$
- * Typically 58pF low C_{RSS}
- * High switching speed
- * Typically 21.2nC low gate charge

SYMBOL

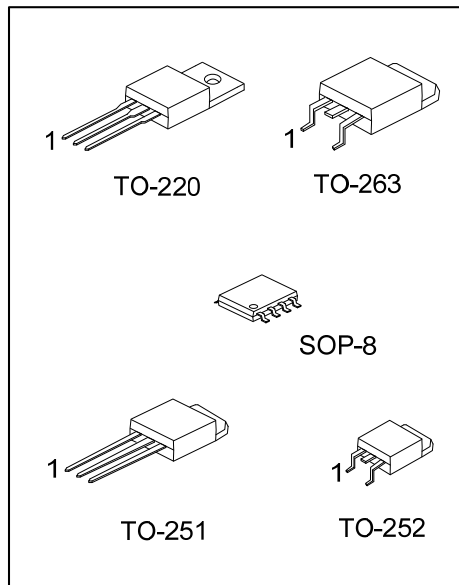


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT20N06L-TA3-T	UTT20N06G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT20N06L-TM3-T	UTT20N06G-TM3-T	TO-251	G	D	S						Tube
UTT20N06L-TN3-R	UTT20N06G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT20N06L-TQ2-T	UTT20N06G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT20N06L-TQ2-R	UTT20N06G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT20N06L-S08-R	UTT20N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT20N06G-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TM3: TO-251, TN3: TO-252</p> <p>TQ2: TO-263, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
--	---



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous	I_D	20	A
	Pulsed	I_{DM}	40	A
Single Pulsed Avalanche Energy		E_{AS}	170	mJ
Power Dissipation	TO-220/TO-263	P_D	89	W
	TO-251/TO-252		50	W
	SOP-8		5.2	W
Junction Temperature		T_J	+150	$^{\circ}C$
Storage Temperature		T_{STG}	-55 ~ +150	$^{\circ}C$

Note: 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	62	$^{\circ}C/W$
	TO-251/TO-252		110	
	SOP-8		100	
Junction to Case	TO-220/TO-263	θ_{JC}	1.4	$^{\circ}C/W$
	TO-251/TO-252		2.5	
	SOP-8		24	

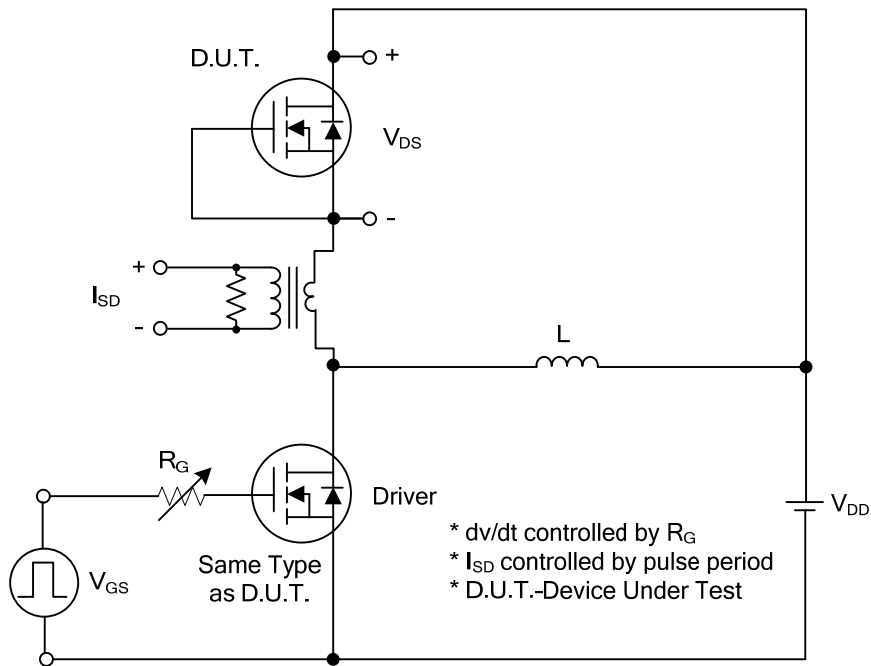
■ ELECTRICAL CHARACTERISTICS (T_c=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
		V _{DS} =48V, V _{GS} =0V, T _C =125°C			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}			+100	nA
	Reverse					
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 =20A		37.5	46	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1000		pF
Output Capacitance	C _{OSS}			100		pF
Reverse Transfer Capacitance	C _{RSS}			82		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =30V, I _D =20A, I _G =3.33mA		31		nC
Gate to Source Charge	Q _{GS}			10		nC
Gate to Drain Charge	Q _{GD}			6		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =30V, I _D =20A, R _G =25Ω, V _{GS} =10V		10		ns
Rise Time	t _R			23		ns
Turn-OFF Delay Time	t _{D(OFF)}			64		ns
Fall-Time	t _F			31		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S		20			A
Maximum Body-Diode Pulsed Current	I _{SM}		80			A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Reverse Recovery Time	t _{rr}	I _S =30A, V _{GS} =0V, dI/dt=100A/μs		24		nS
Reverse Recovery Charge	Q _{rr}			22		nC

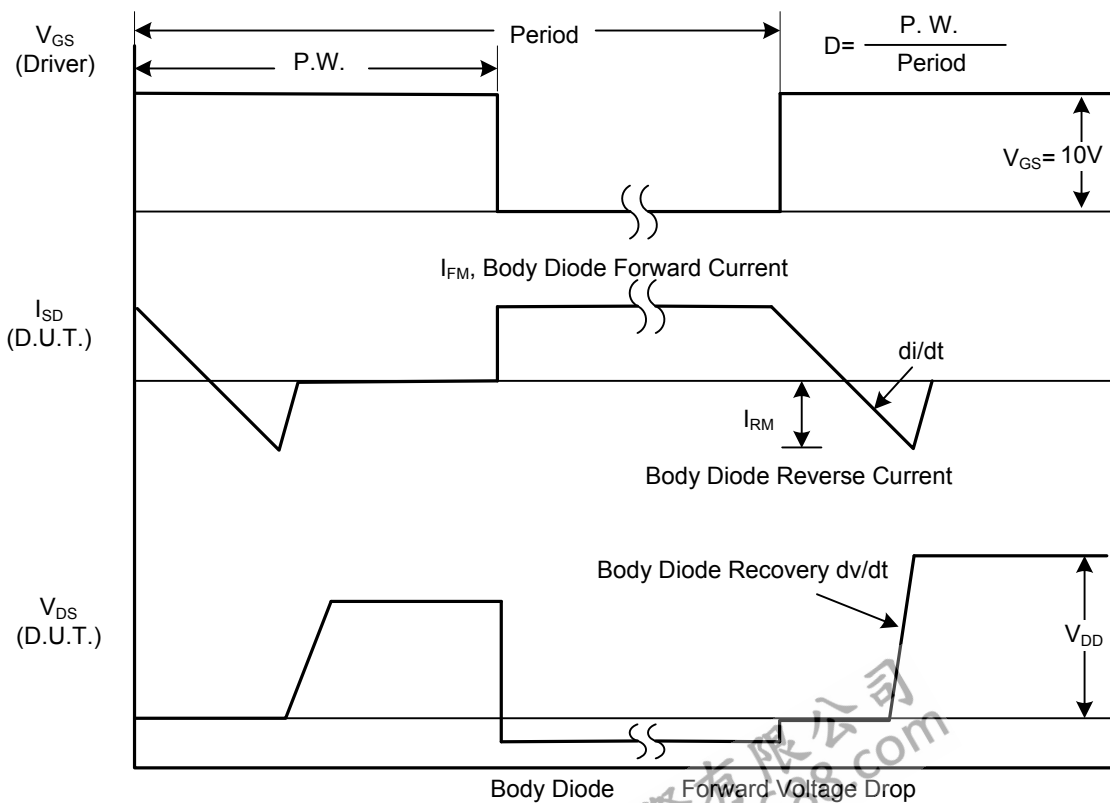
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

TEST CIRCUITS AND WAVEFORMS

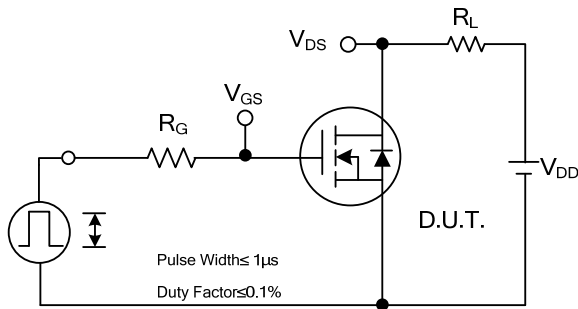


Peak Diode Recovery dv/dt Test Circuit

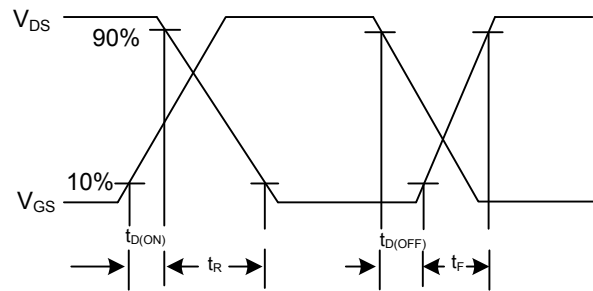


Peak Diode Recovery dv/dt Waveforms

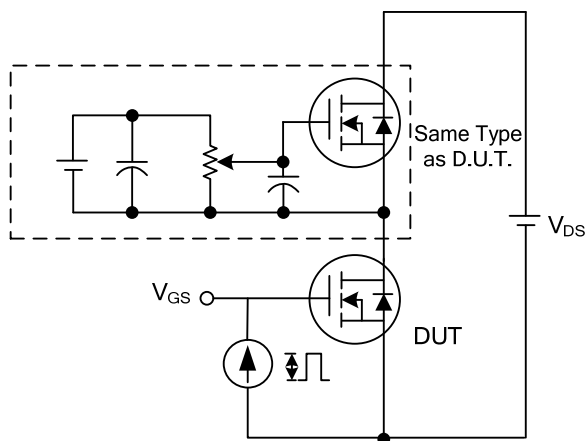
TEST CIRCUITS AND WAVEFORMS



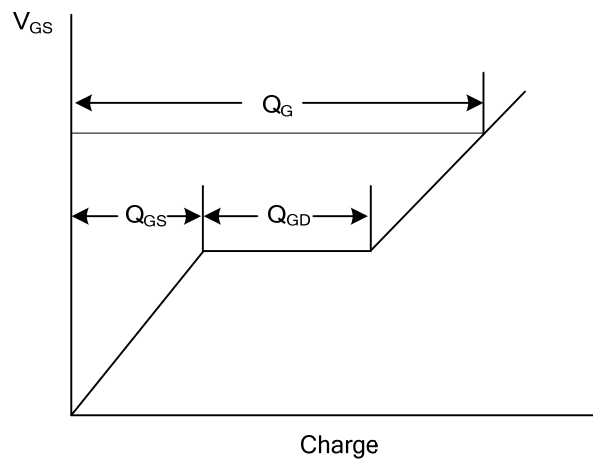
Switching Test Circuit



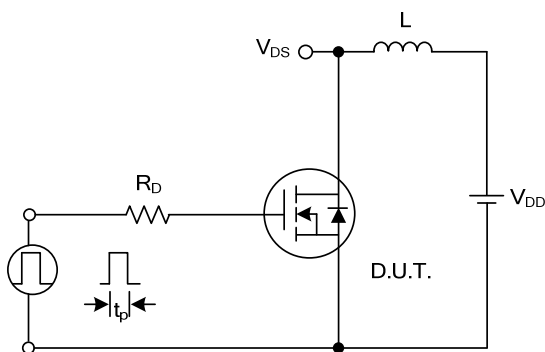
Switching Waveforms



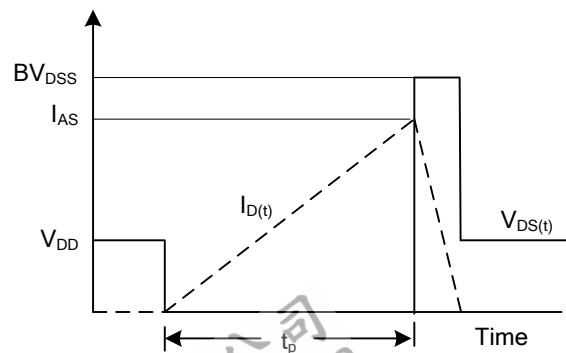
Gate Charge Test Circuit



Gate Charge Waveform

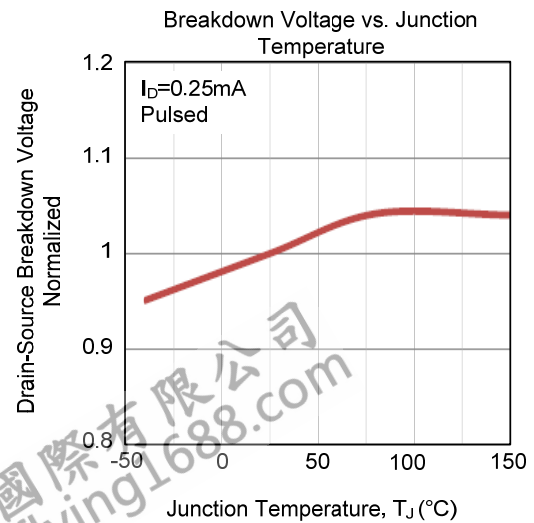
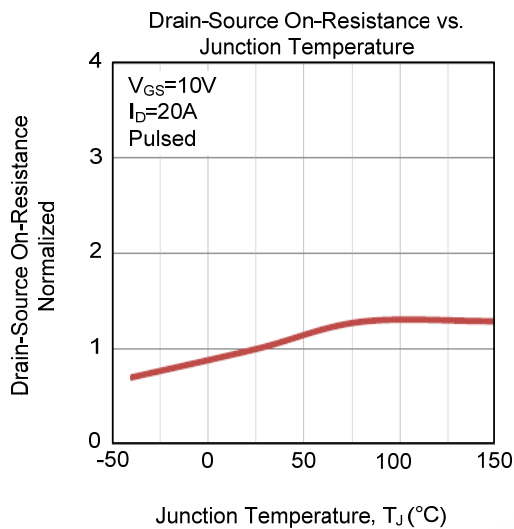
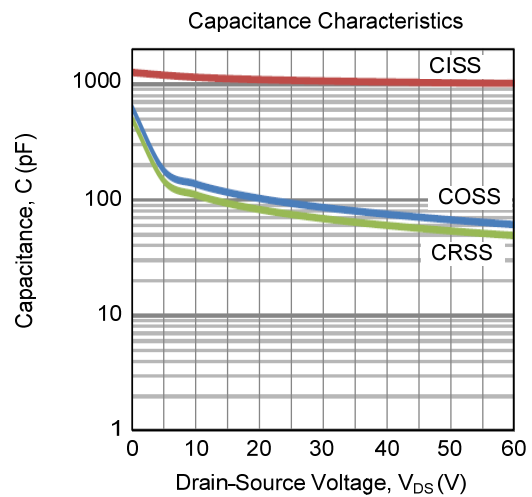
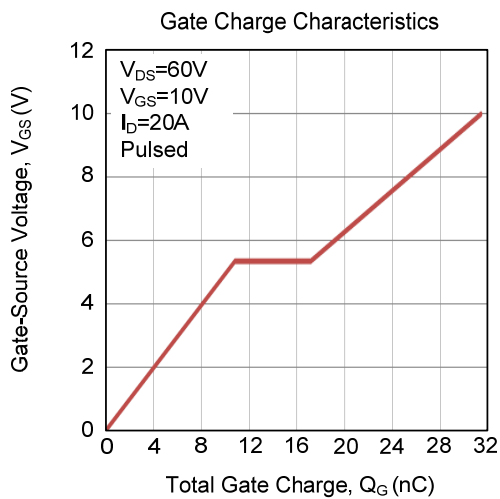
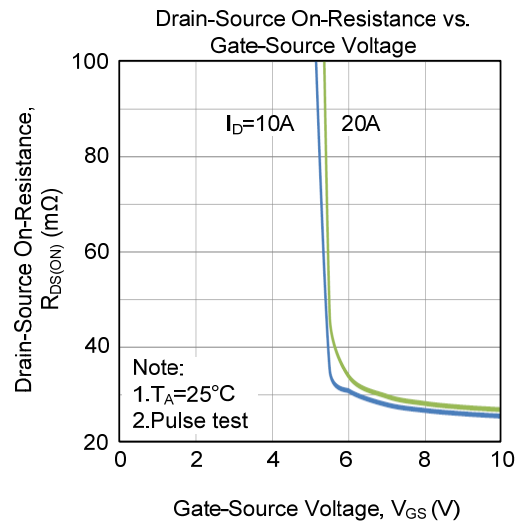
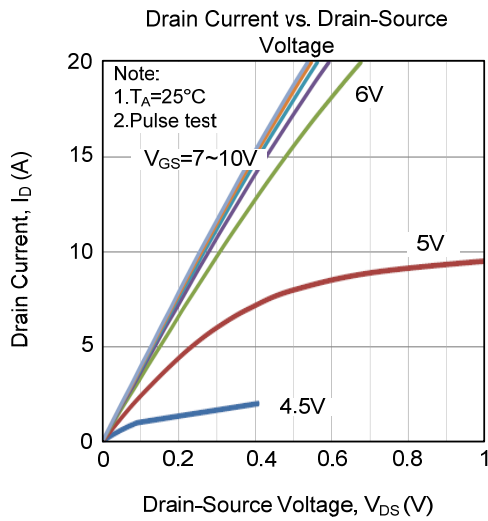


Unclamped Inductive Switching Test Circuit

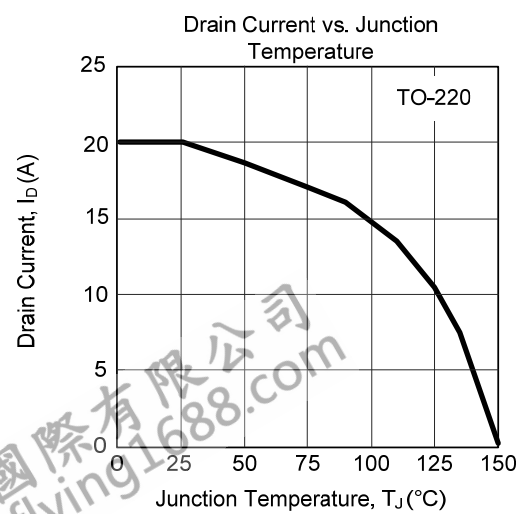
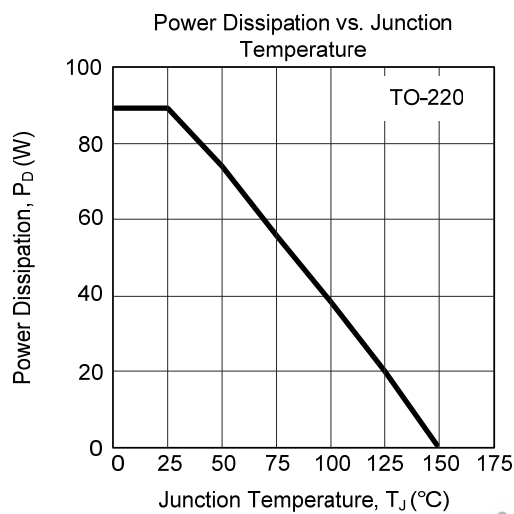
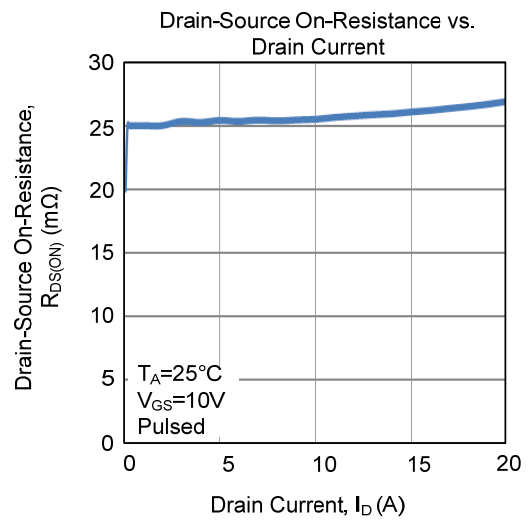
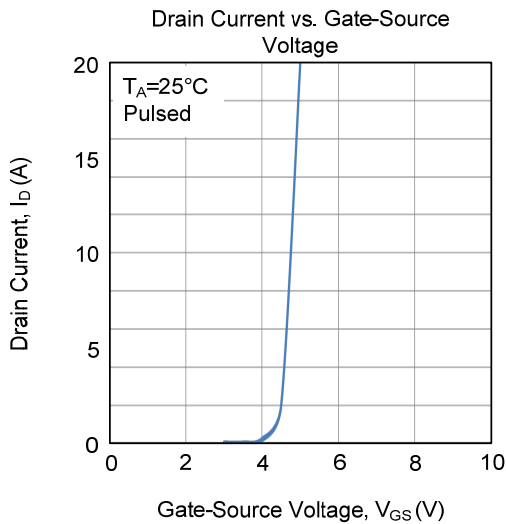
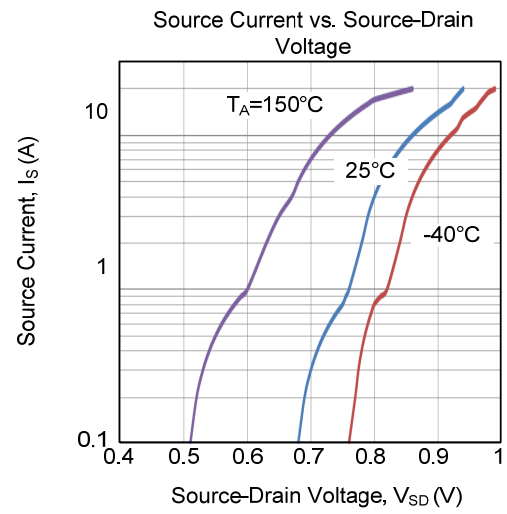
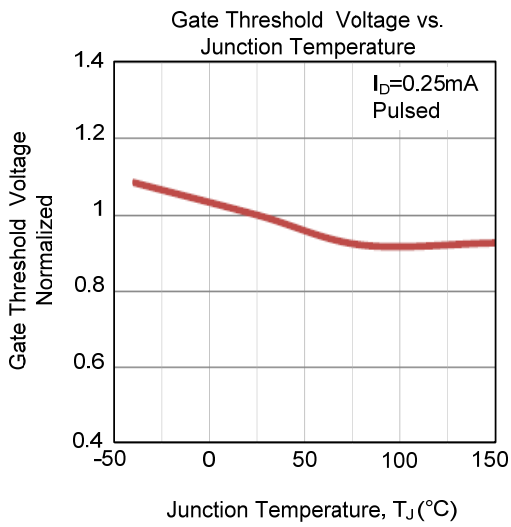


Unclamped Inductive Switching Waveforms

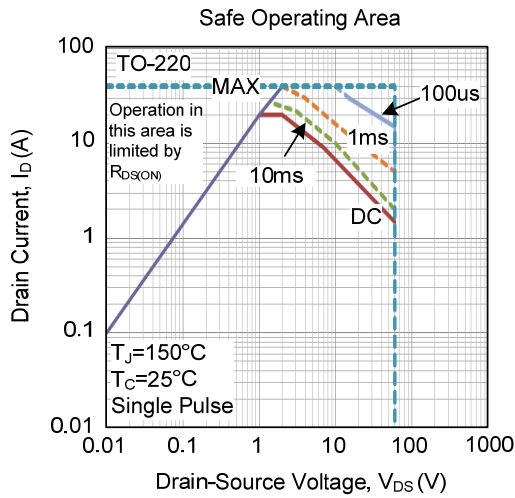
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (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.