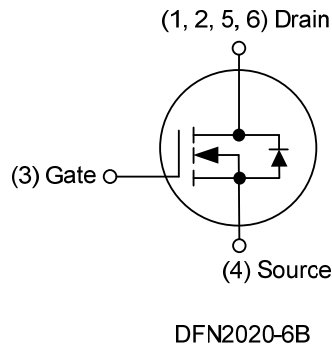
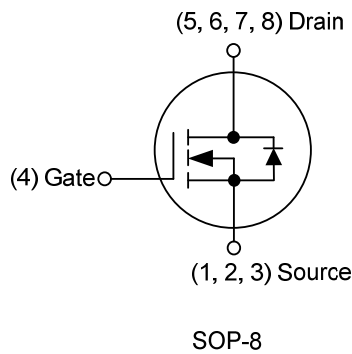


**UT25N04****Power MOSFET****25A, 40V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UT25N04** is a N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

FEATURES

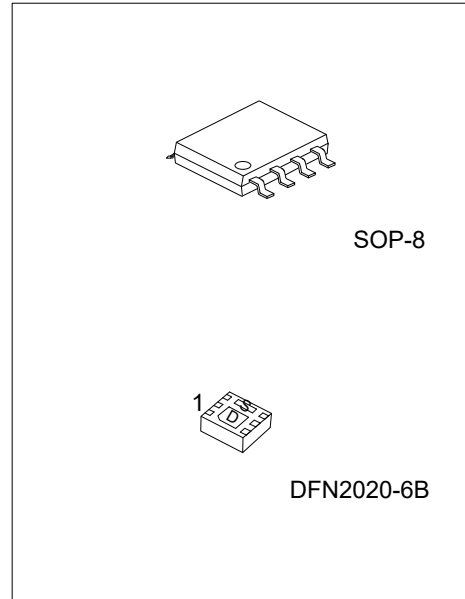
- * $R_{DS(ON)} \leq 20 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=12.5\text{A}$
- $R_{DS(ON)} \leq 26 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=12.5\text{A}$
- * Simple drive requirement

SYMBOL**ORDERING INFORMATION**

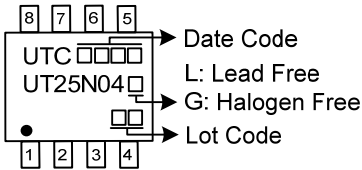
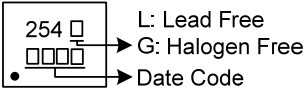
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT25N04L-S08-R	UT25N04G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT25N04L-K06B-2020-R	UT25N04G-K06B-2020-R	DFN2020-6B	D	D	G	S	D	D	-	-	Tape Reel

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

UT25N04G-S08-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) S08: SOP-8, K06B-2020: DFN2020-6B
	(3)Green Package	(3) G: Halogen Free and Lead Free L: Lead Free



MARKING

SOP-8	DFN2020-6B
 8 7 6 5 UTC □ □ □ □ UT25N04 □ ● □ □ 1 2 3 4 → Date Code → L: Lead Free → G: Halogen Free → Lot Code	 254 □ □ □ □ □ ● □ → L: Lead Free → G: Halogen Free → Date Code

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	40	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	25	A
	Pulsed (Note 2)	I _{DM}	50	A
Avalanche Energy (Note 3)	Single Pulsed (Note 3)	E _{AS}	11	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	1.9	V/ns
Power Dissipation	SOP-8	P _D	1.7	W
	DFN2020-8		10	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		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} = 15A, V_{DD} = 25V, R_G = 25 Ω, Starting T_J = 25°C.

4. I_{SD} ≤ 25A, di/dt ≤ 200 A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J = 25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ _{JA}	125	°C/W
	DFN2020-8		270	°C/W
Junction to Case	SOP-8	θ _{JC}	73.5	°C/W
	DFN2020-8		12	°C/W

Note: Device mounted on FR-4 substrate Pc board, 2oz copper, with 1inch square copper plate.

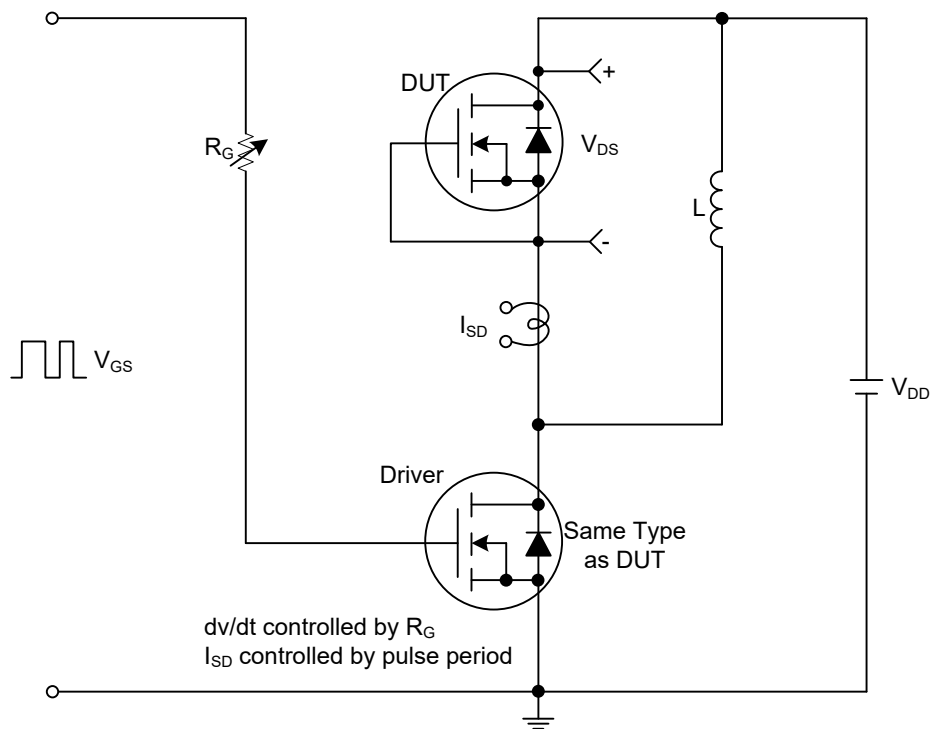
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	40			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V ,V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =12.5A			20	mΩ
		V _{GS} =4.5V, I _D =12.5A			26	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V,V _{GS} =0V, f=1.0MHz		700		pF
Output Capacitance	C _{OSS}			87		pF
Reverse Transfer Capacitance	C _{RSS}			75		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =32V, V _{GS} =4.5V, I _D =25A, (Note 1, 2)		14		nC
Gate Source Charge	Q _{GS}			4.2		nC
Gate Drain Charge	Q _{GD}			7		nC
Turn-ON Delay Time (Note 1)	t _{D(ON)}	V _{DD} =20V, V _{GS} =10V, I _D =25A, R _G =3Ω (Note 1, 2)		4		ns
Turn-ON Rise Time	t _R			17		ns
Turn-OFF Delay Time	t _{D(OFF)}			20		ns
Turn-OFF Fall-Time	t _F			19		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				25	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				50	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =25A, V _{GS} =0V			1.4	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =25A,V _{GS} =0V,		42		ns
Reverse Recovery Charge	Q _{rr}	dI/dt=40A/μs		25		nC

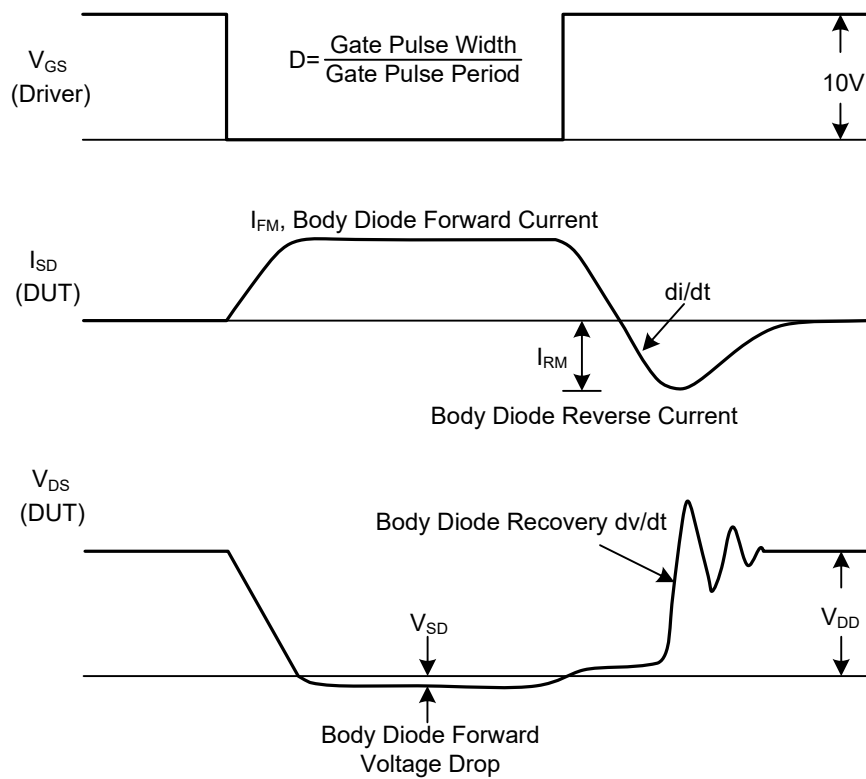
Notes: 1. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



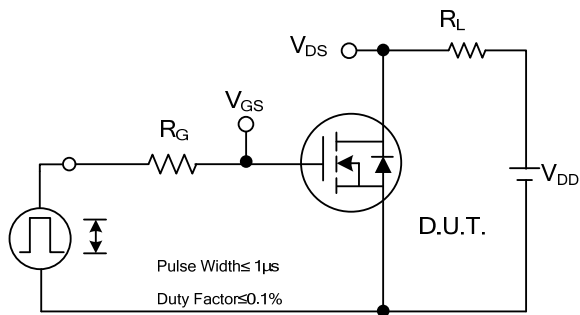
Peak Diode Recovery dv/dt Test Circuit



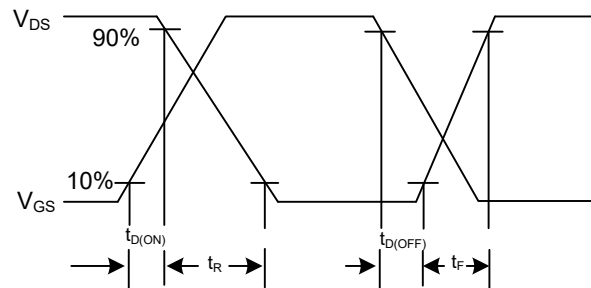
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

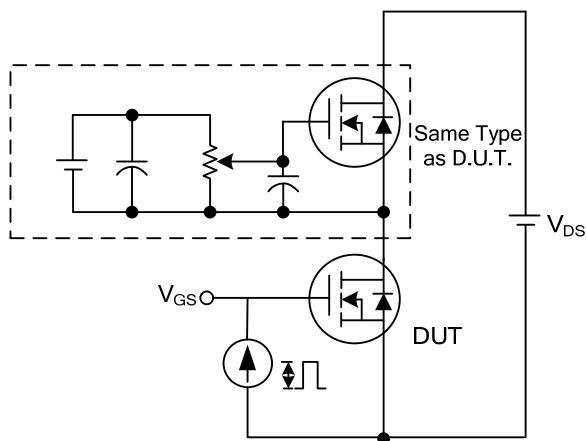
■ TEST CIRCUITS AND WAVEFORMS



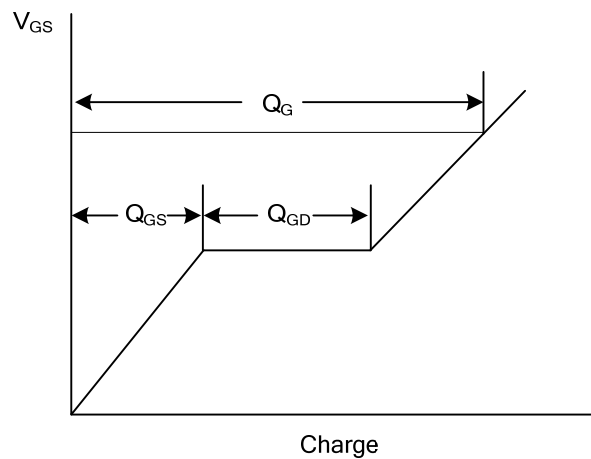
Switching Test Circuit



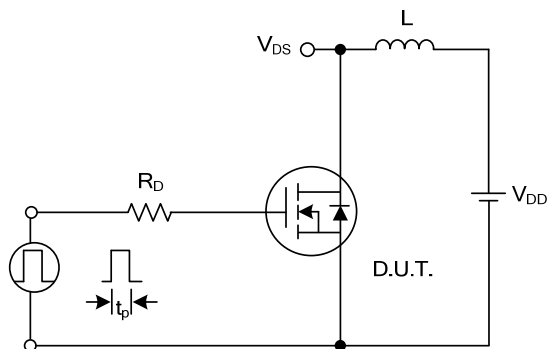
Switching Waveforms



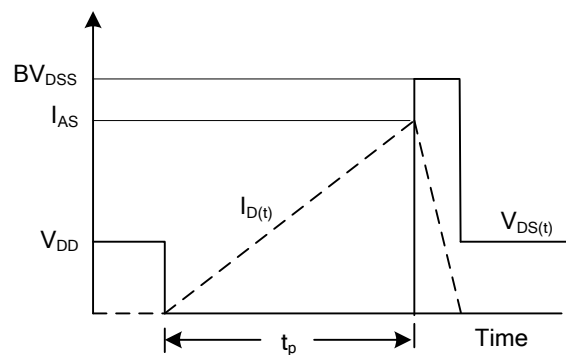
Gate Charge Test Circuit



Gate Charge Waveform

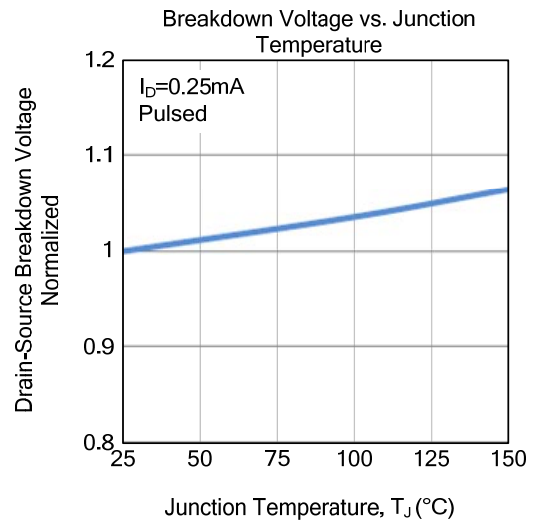
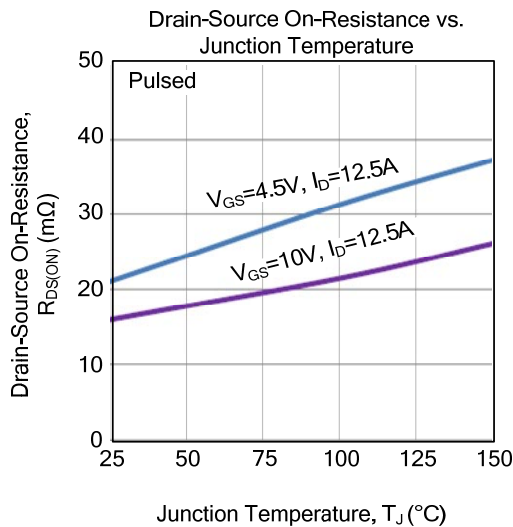
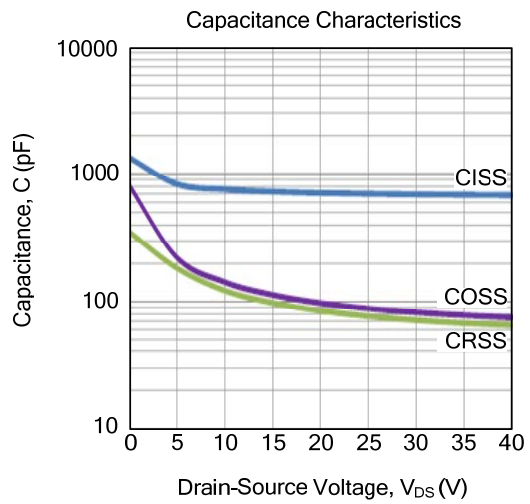
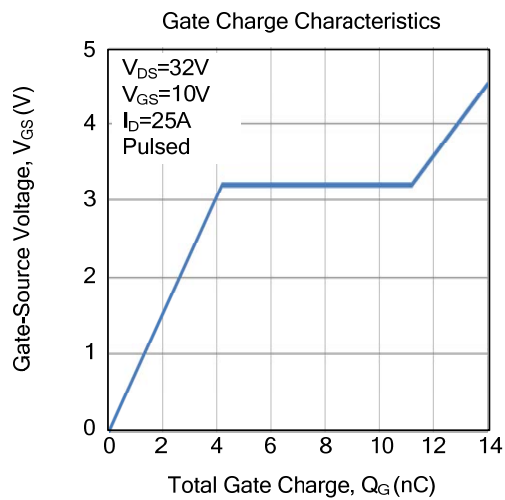
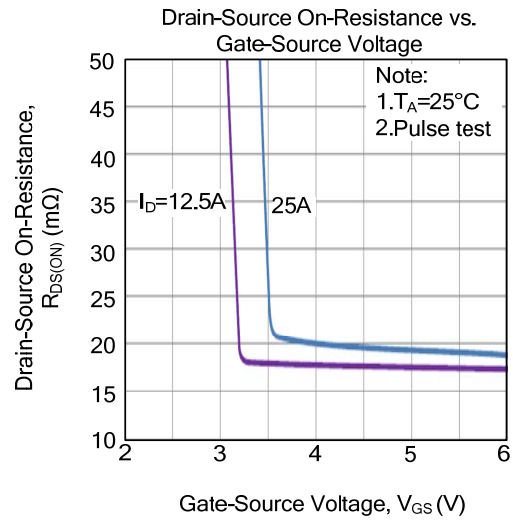
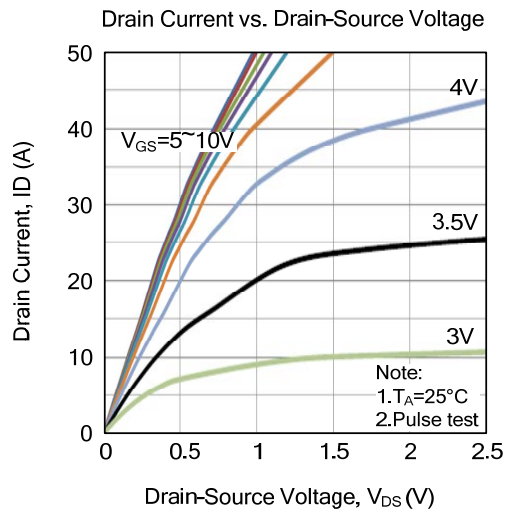


Unclamped Inductive Switching Test Circuit

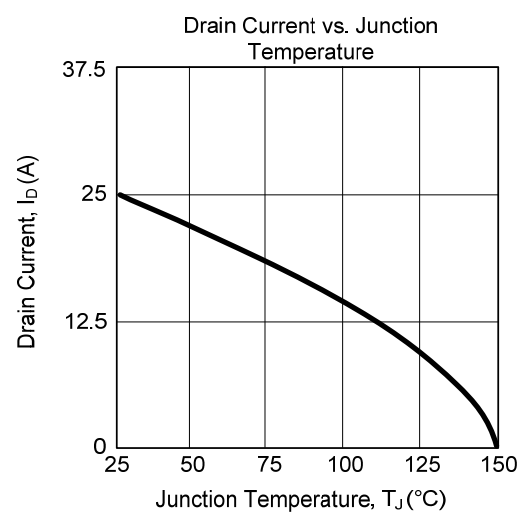
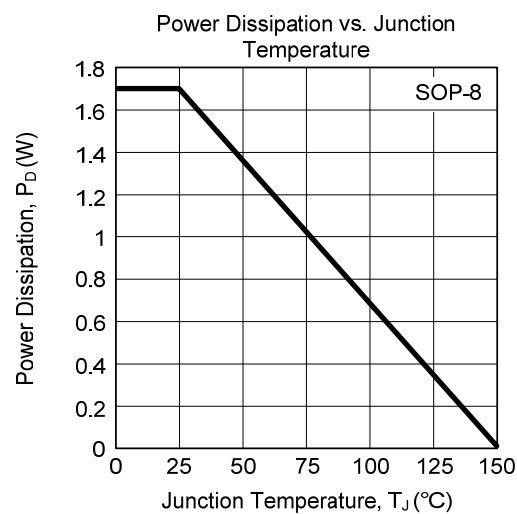
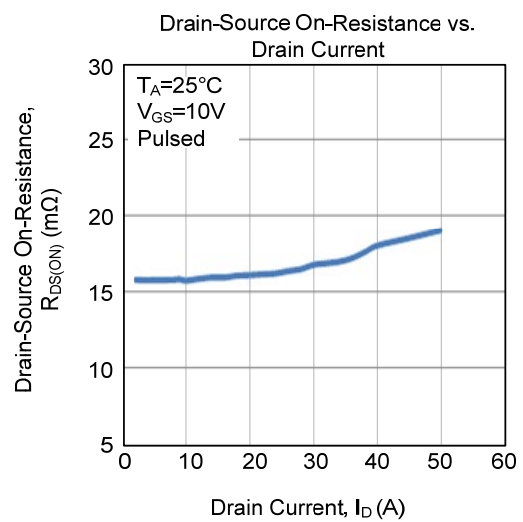
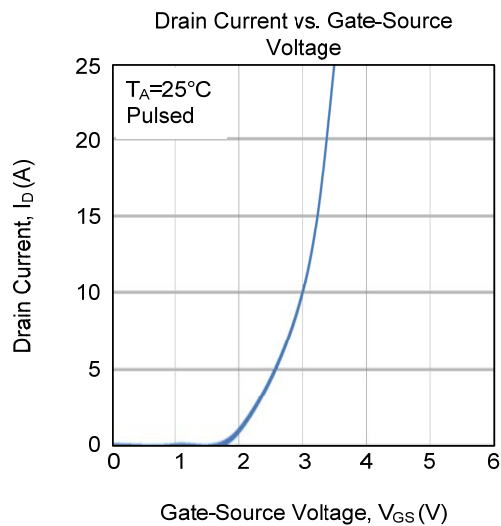
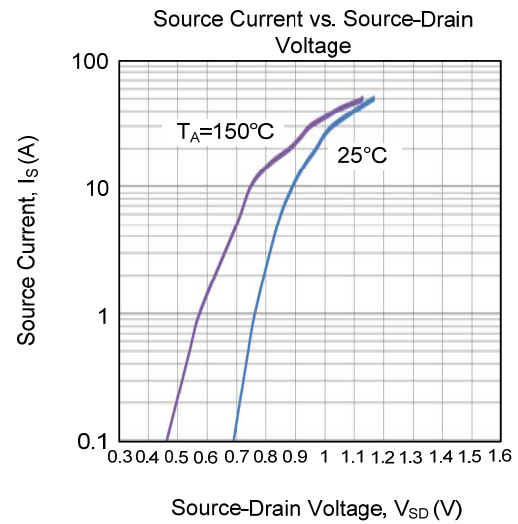
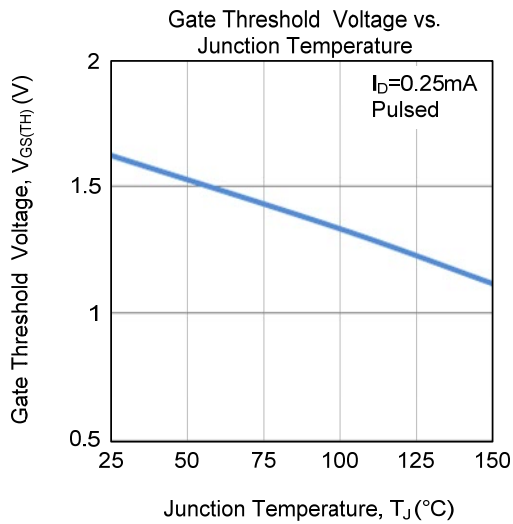


Unclamped Inductive Switching Waveforms

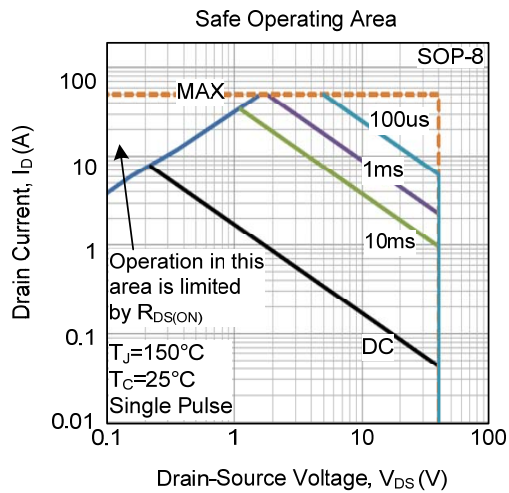
TYPICAL CHARACTERISTICS



■ 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.