



UTT36N10H

Power MOSFET

36A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

The UTC **UTT36N10H** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

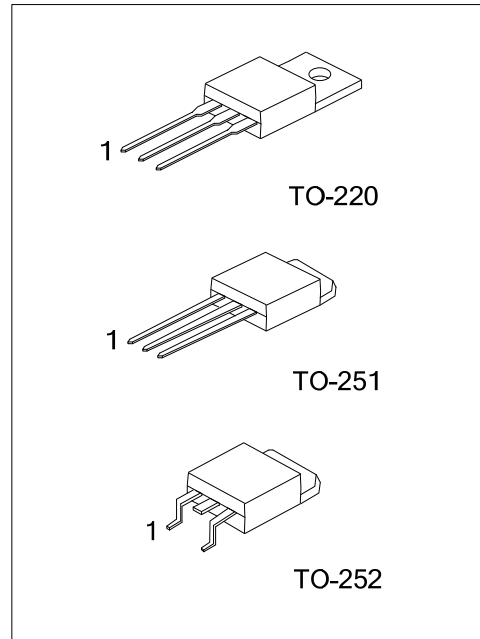
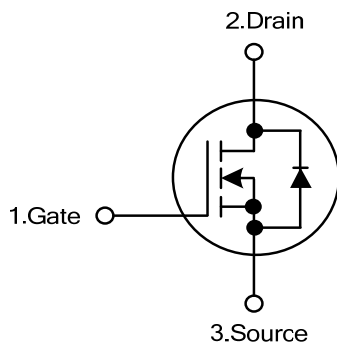
The UTC **UTT36N10H** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

FEATURES

* $R_{DS(ON)} \leq 44 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=30\text{A}$

* High Switching Speed

SYMBOL



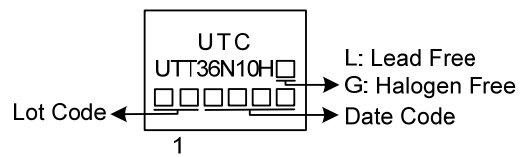
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT36N10HL-TA3-T	UTT36N10HG-TA3-T	TO-220	G	D	S	Tube
UTT36N10HL-TM3-T	UTT36N10HG-TM3-T	TO-251	G	D	S	Tube
UTT36N10HL-TN3-R	UTT36N10HG-TN3-R	TO-252	G	D	S	Tape Reel

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

UTT36N10HG-TA3-T	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) TA3: TO-220, TM3: TO-251, TN3: TO-252
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous ($V_{GS}=10\text{V}$) $T_C=25^{\circ}\text{C}$	I_D	36	A
	Pulsed	I_{DM}	72	A
Avalanche Energy (Note 3)	Single Pulsed	E_{AS}	70	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.7	V/ns
Power Dissipation	TO-220	P_D	90	W
	TO-251/TO-252		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. $L=0.1\text{mH}$, $I_{AS}=37.4\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.

4. $I_{SD}\leq 30\text{A}$, $di/dt\leq 200\text{A}/\mu\text{s}$, $V_{DD}\leq BV_{DSS}$, Starting $T_J=25^{\circ}\text{C}$.

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
	TO-251/TO-252		110	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220	θ_{JC}	1.38	$^{\circ}\text{C}/\text{W}$
	TO-251/TO-252		2.85	$^{\circ}\text{C}/\text{W}$

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

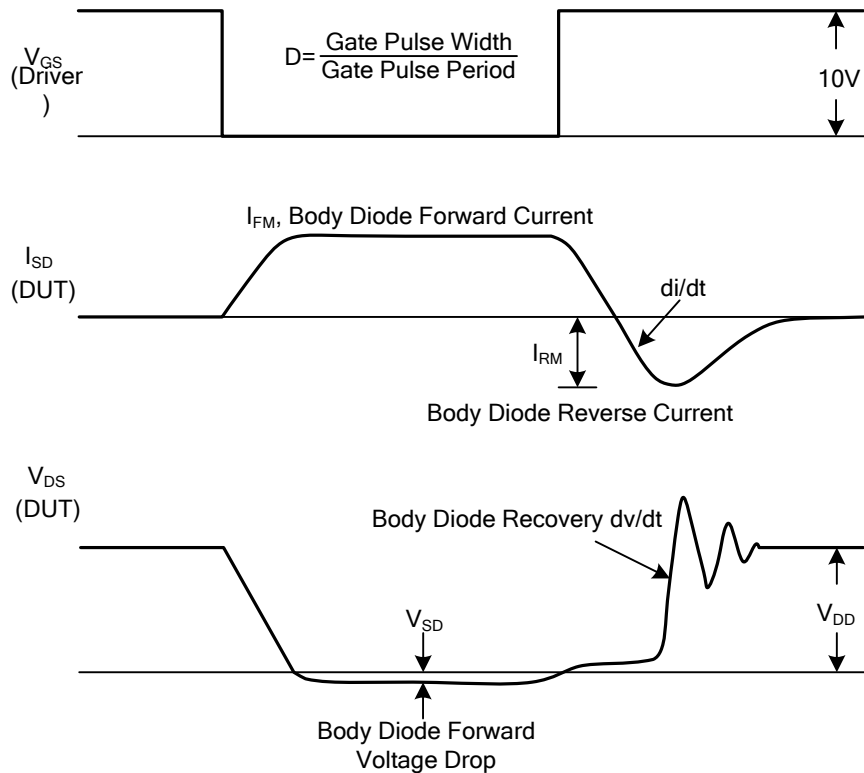
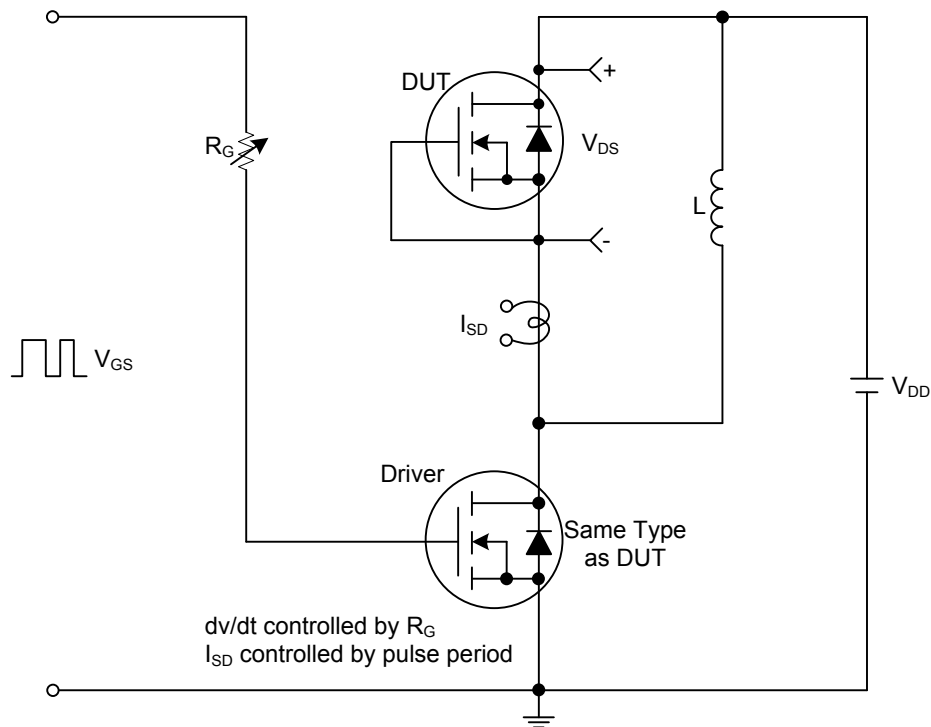
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =100V, 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 =30A			44	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		2860		pF
Output Capacitance		C _{OSS}			144		pF
Reverse Transfer Capacitance		C _{RSS}			125		pF
SWITCHING PARAMETERS							
Total Gate Charge at 10V		Q _G	V _{DS} =80V, V _{GS} =10V, I _D =36A, I _G =1mA (Note 1, 2)		64		nC
Gate to Source Charge		Q _{GS}			10		nC
Gate to Drain Charge		Q _{GD}			16.5		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =50V, V _{GS} =10V, I _D =36A, R _G =3.3Ω (Note 1, 2)		11		ns
Rise Time		t _R			18		ns
Turn-OFF Delay Time		t _{D(OFF)}			42		ns
Fall-Time		t _F			19		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				36	A
Continuous Drain-Source Current		I _{SD}				72	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =36A, V _{GS} =0V			1.4	V
Reverse Recovery Time		t _{rr}	I _F =30A, di/dt = 100A/μs		66		ns
Reverse Recovery Charge		Q _{rr}			0.36		μC

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

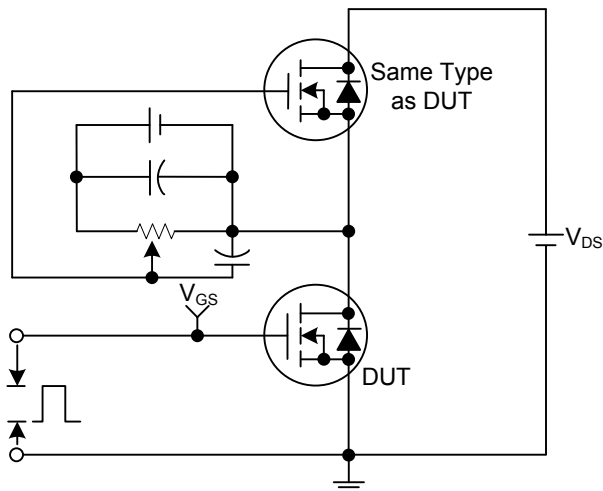
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

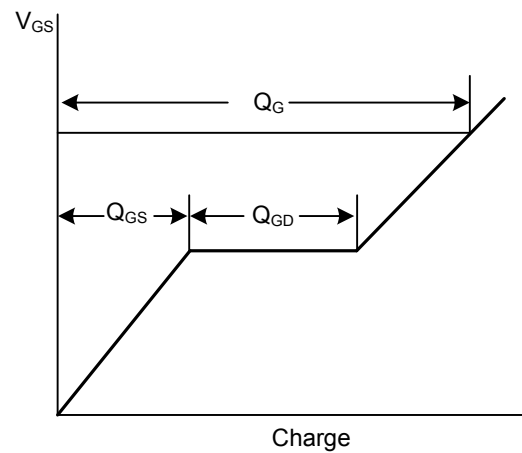


Peak Diode Recovery dv/dt Test Circuit and Waveforms

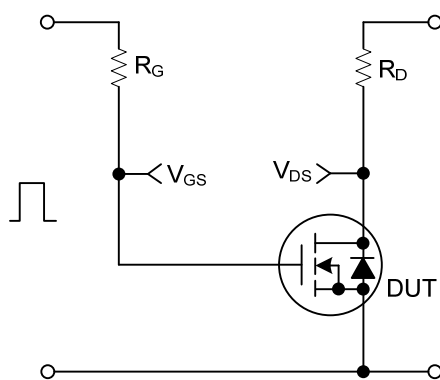
■ TEST CIRCUITS AND WAVEFORMS



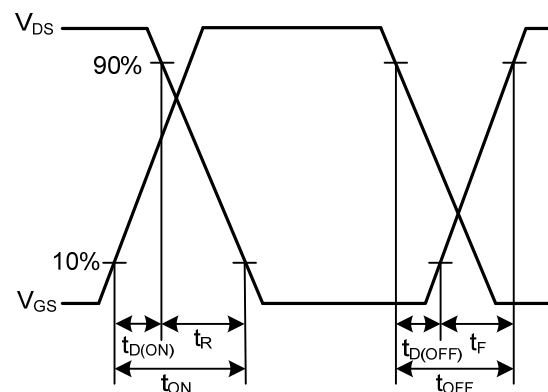
Gate Charge Test Circuit



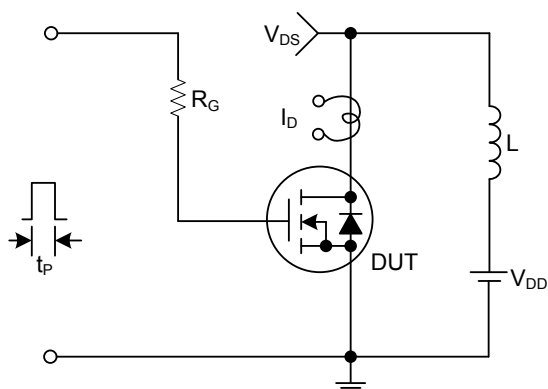
Gate Charge Waveforms



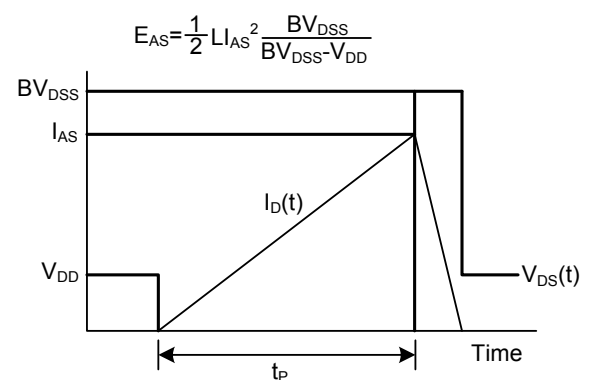
Resistive Switching Test Circuit



Resistive Switching Waveforms

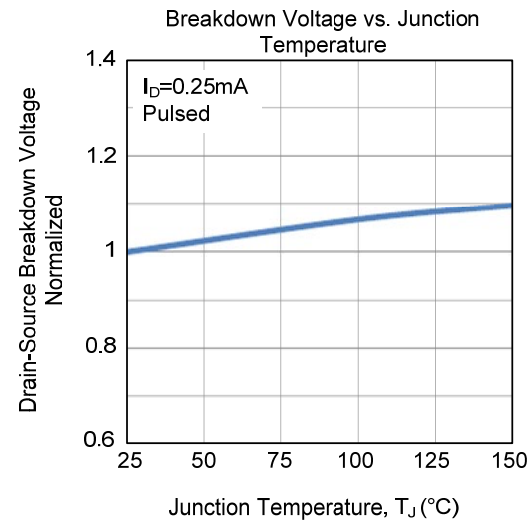
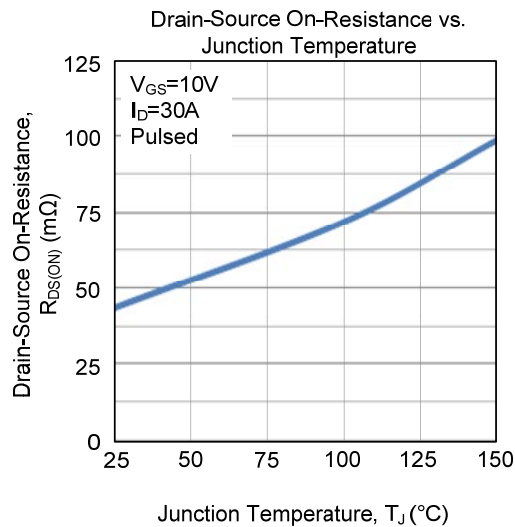
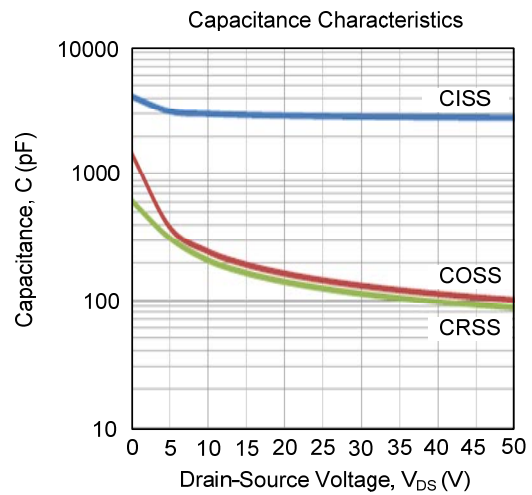
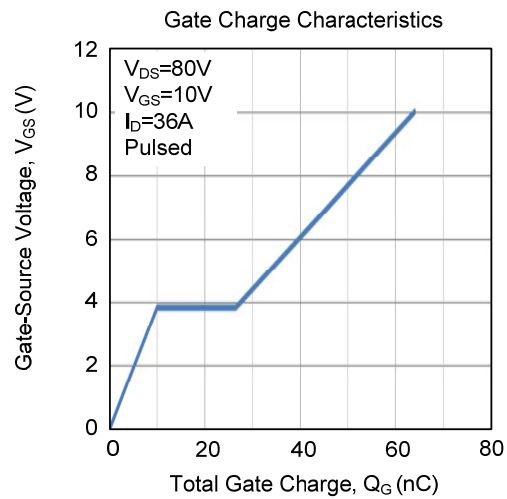
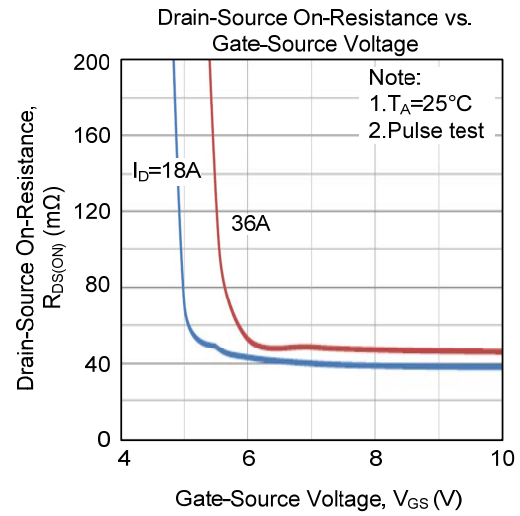
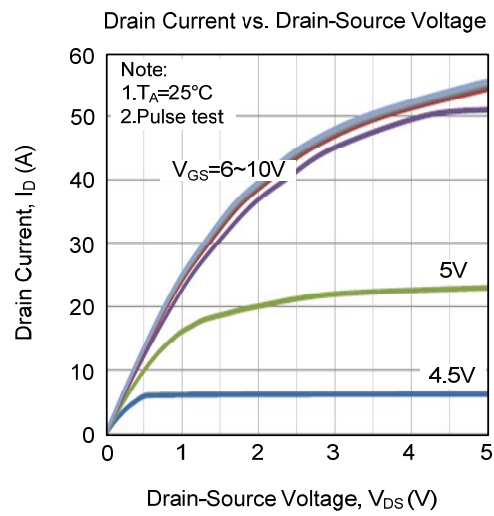


Unclamped Inductive Switching Test Circuit

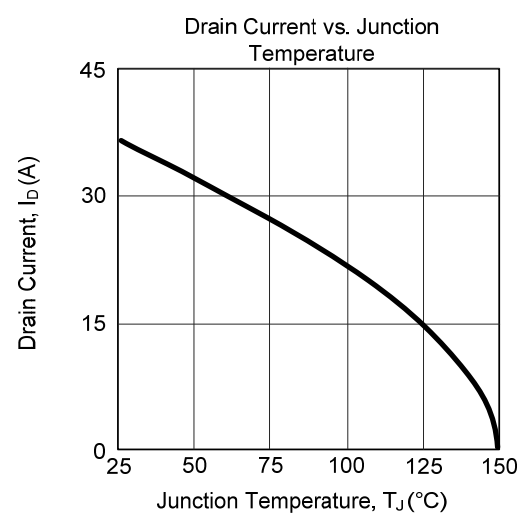
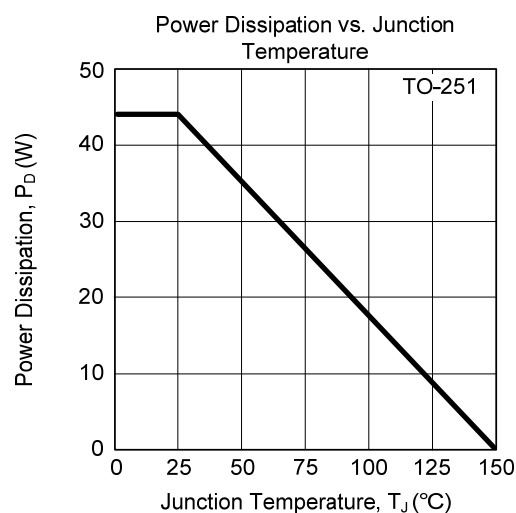
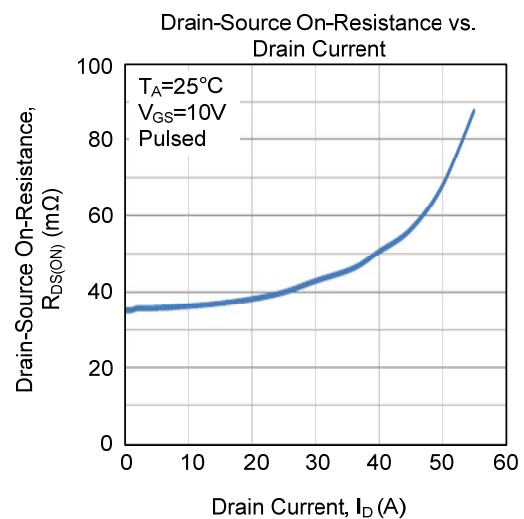
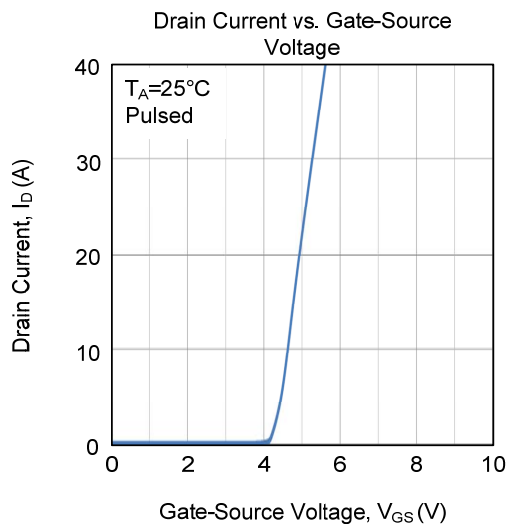
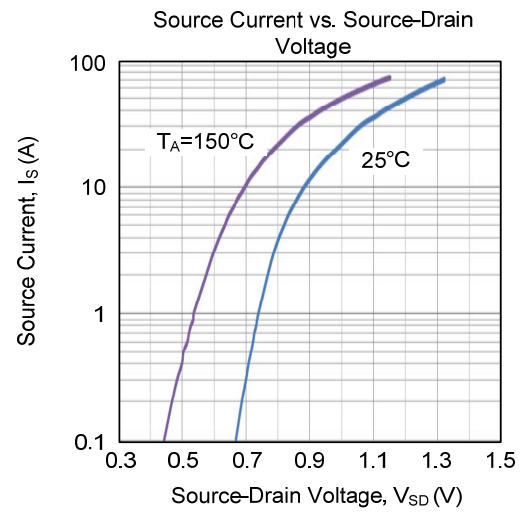
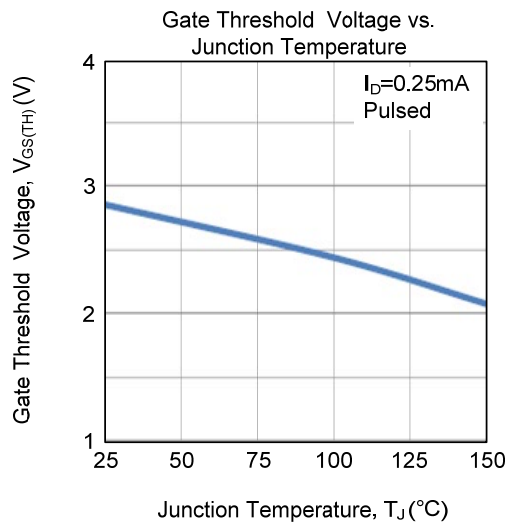


Unclamped Inductive Switching Waveforms

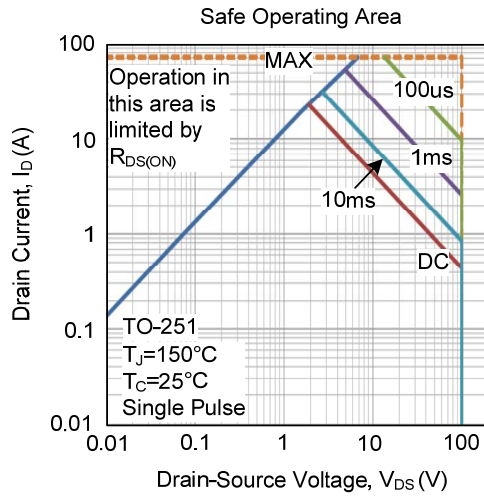
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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