



UT32N10

Power MOSFET

32A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

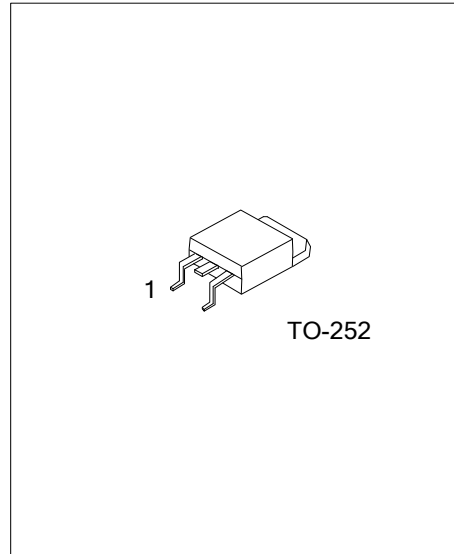
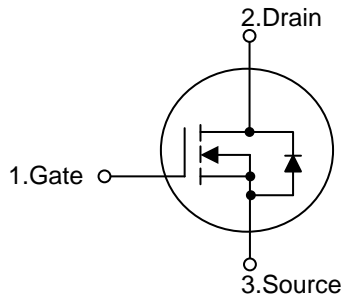
The UTC **UT32N10** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$ and high switching speed.

The UTC **UT32N10** is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts, etc.

FEATURES

- * $R_{DS(ON)} \leq 18 \text{ m}\Omega @ V_{GS}=10\text{V}, I_D=16\text{A}$
- * $R_{DS(ON)} \leq 25 \text{ m}\Omega @ V_{GS}=4.5\text{V}, I_D=16\text{A}$
- * High Switching Speed
- * Simple drive requirement

SYMBOL



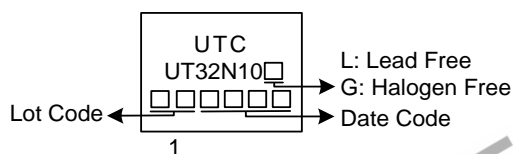
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT32N10L-TN3-R	UT32N10G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UT32N10G-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_C=25°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	I _D	32	A
	Pulsed (Note 2)	I _{DM}	64	A
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	423	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.2	V/ns
Power Dissipation		P _D	50	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=10mH, I_{AS}=9.2A, V_{DD}=50V, R_G=25Ω, Starting T_J = 25°C

4. I_{SD}≤30A, di/dt≤200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ _{JA}	110	°C/W
Junction to Case		θ _{JC}	2.5 (Note)	°C/W

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

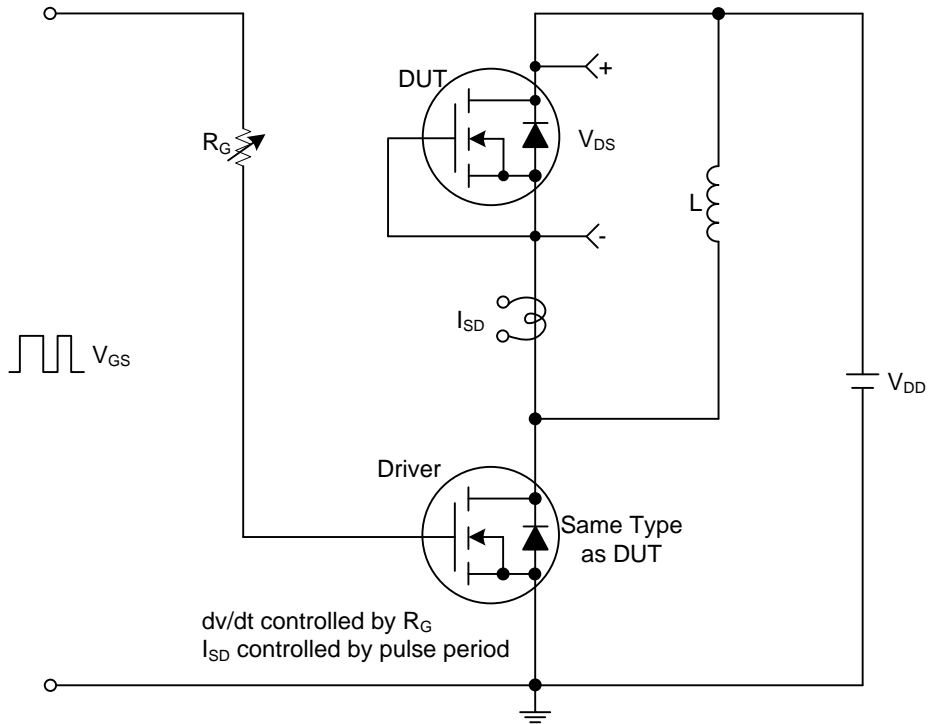
■ **ELECTRICAL CHARACTERISTICS** ($T_J=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		3.0	V
Drain to Source On-state Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=16A$			18	$m\Omega$
		$V_{GS}=4.5V, I_D=16A$			25	$m\Omega$
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=25V, f=1.0\text{MHz}$		3060		pF
Output Capacitance	C_{OSS}			280		pF
Reverse Transfer Capacitance	C_{RSS}			245		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 1)	Q_G	$V_{DS}=80V, V_{GS}=10V, I_D=32A, I_G=1\text{mA}$ (Note 1, 2)		81		nC
Gate Source Charge	Q_{GS}			8		nC
Gate Drain Charge	Q_{GD}			21		nC
Turn-ON Delay Time (Note 1)	$t_{D(ON)}$	$V_{DD}=50V, V_{GS}=10V, I_D=32A, R_G=25\Omega$ (Note 1, 2)		14		ns
Turn-ON Rise Time	t_R			21		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			59		ns
Turn-OFF Fall-Time	t_F			27		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				32	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				64	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	$I_S=32A, V_{GS}=0V$			1.4	V
Reverse Recovery Time (Note 1)	t_{rr}	$I_S=32A, V_{GS}=0V, di/dt=100A/\mu s$		58		ns
Reverse Recovery Charge	Q_{rr}				108	

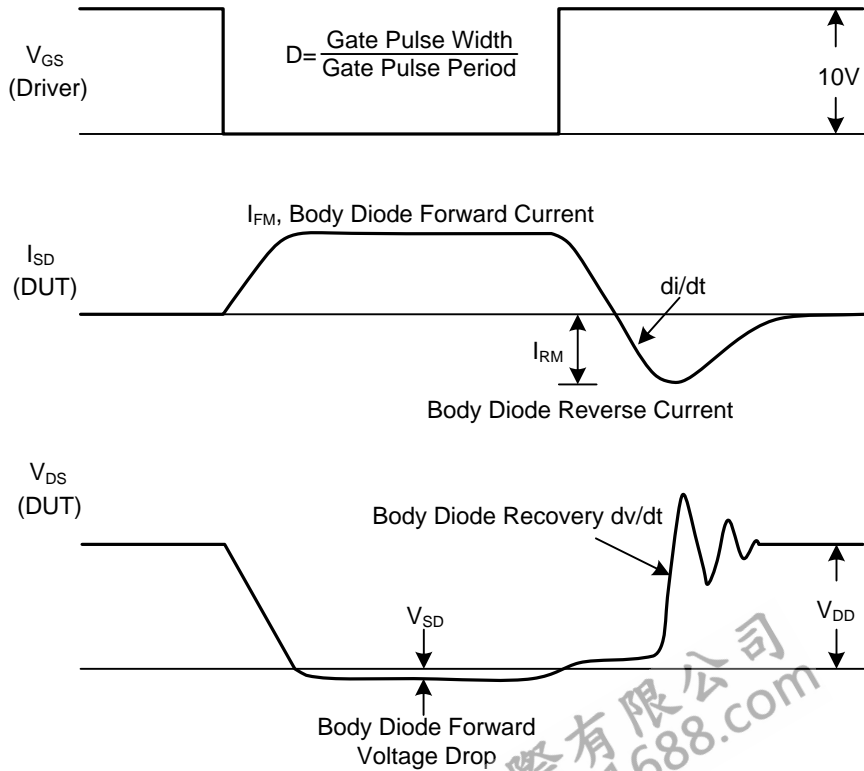
Notes: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

TEST CIRCUITS AND WAVEFORMS



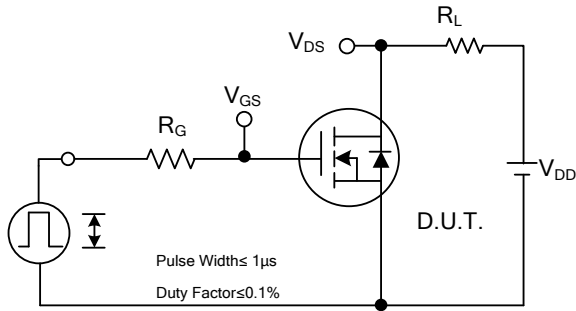
Peak Diode Recovery dv/dt Test Circuit



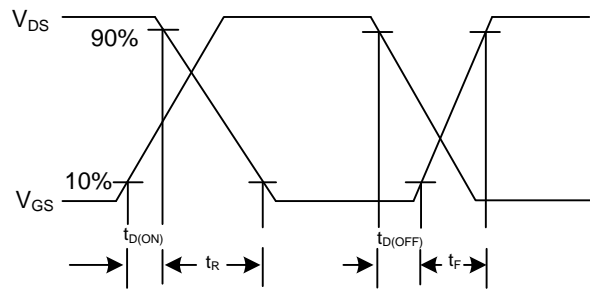
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

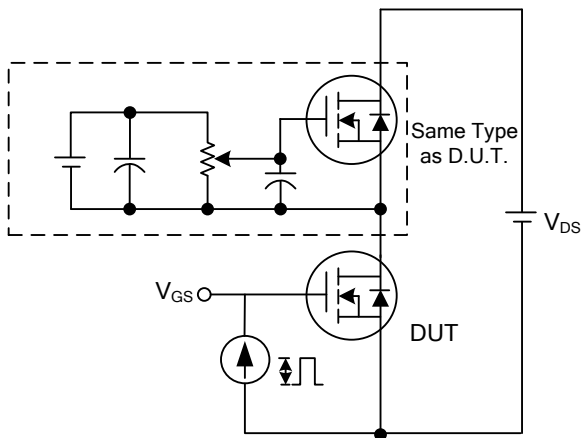
TEST CIRCUITS AND WAVEFORMS



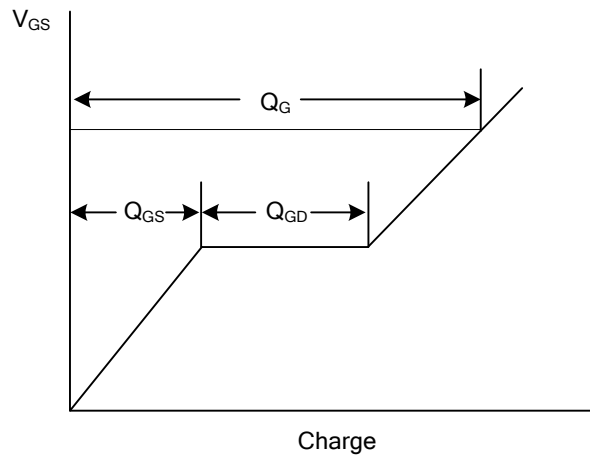
Switching Test Circuit



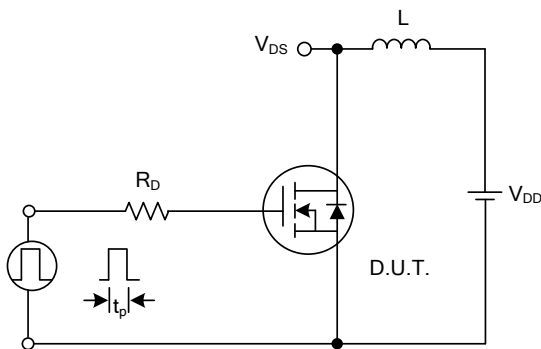
Switching Waveforms



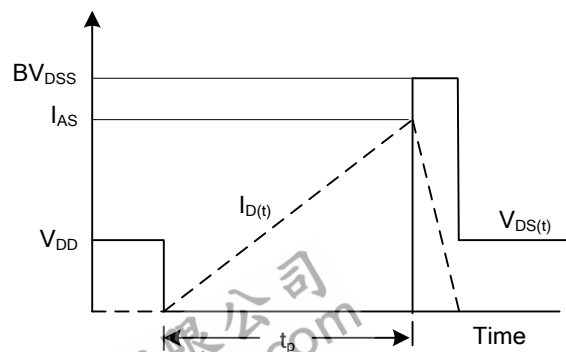
Gate Charge Test Circuit



Gate Charge Waveform

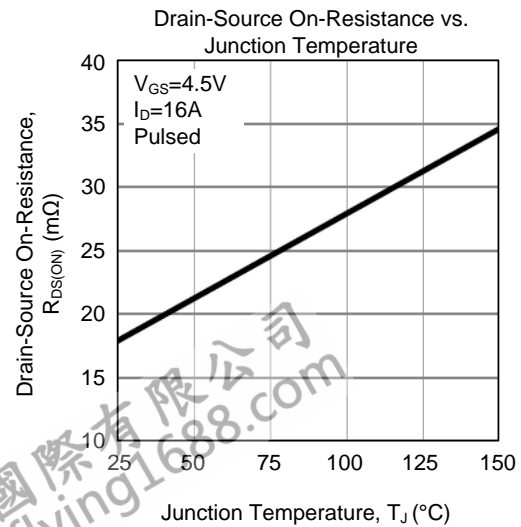
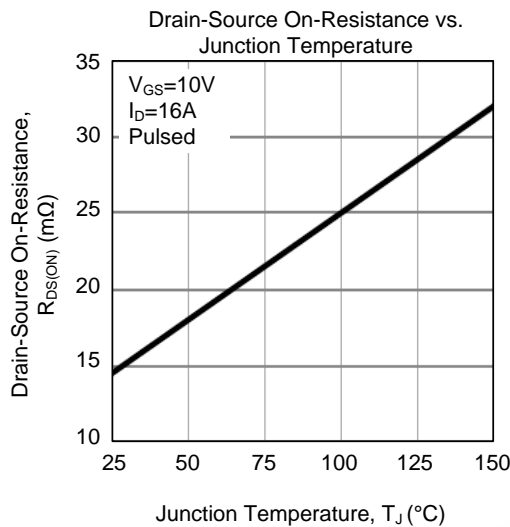
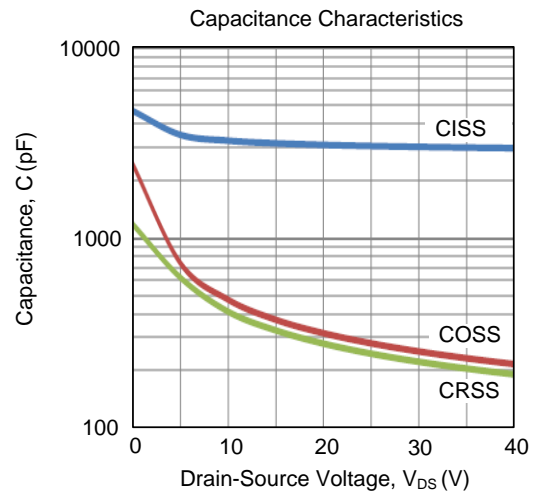
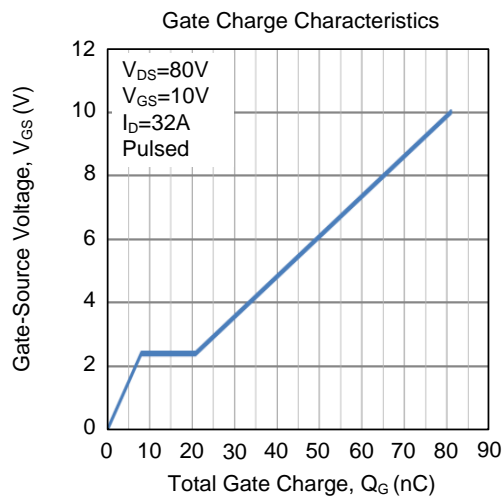
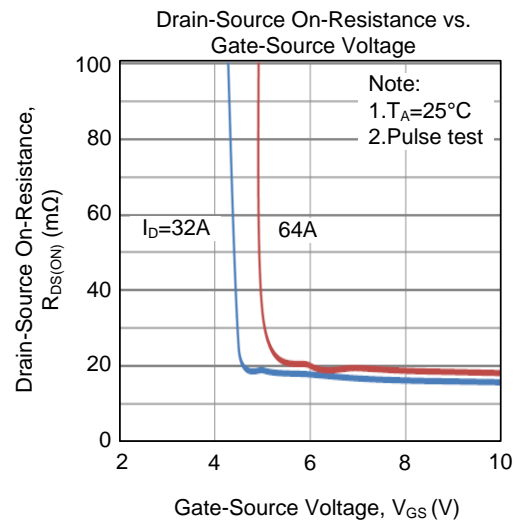
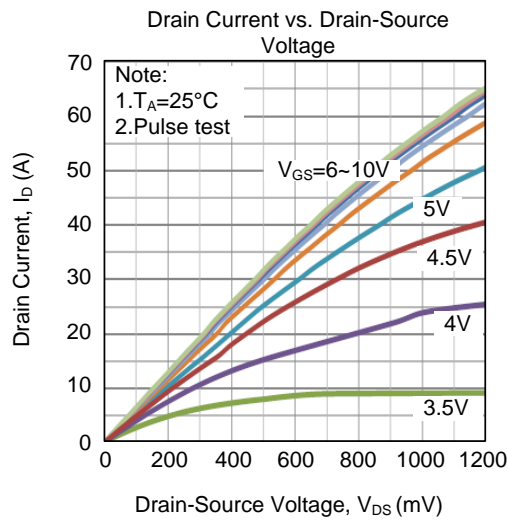


Unclamped Inductive Switching Test Circuit

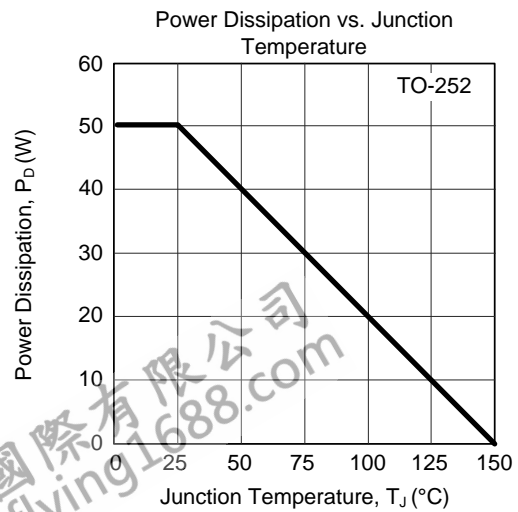
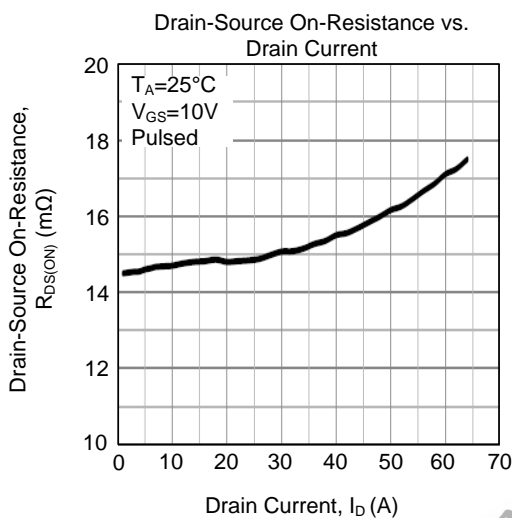
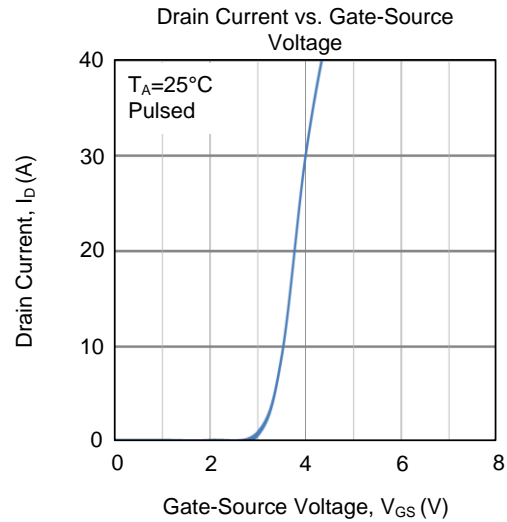
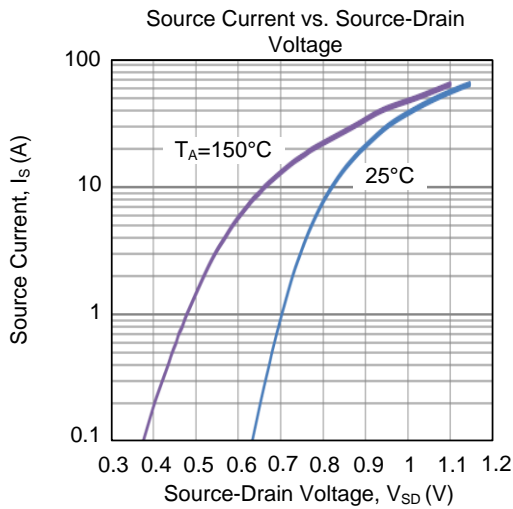
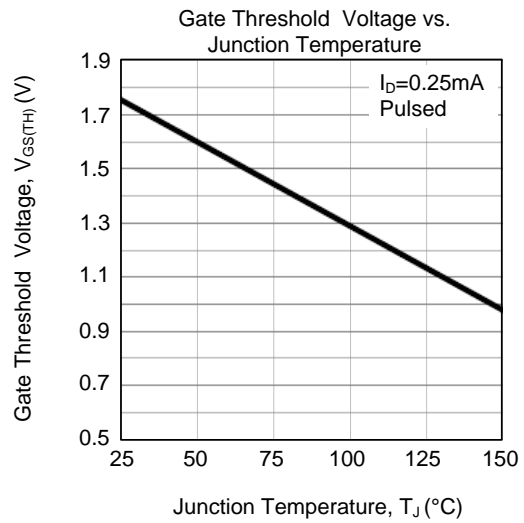
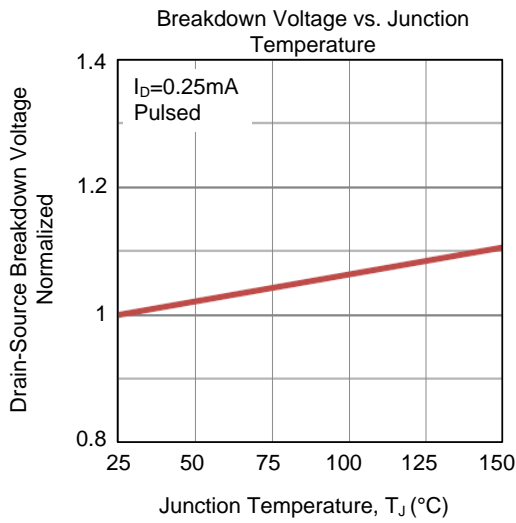


Unclamped Inductive Switching Waveforms

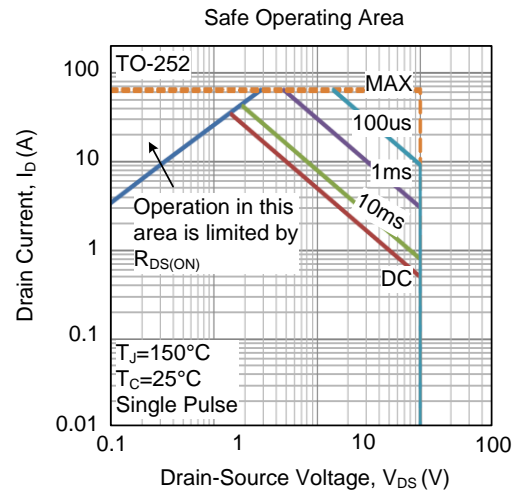
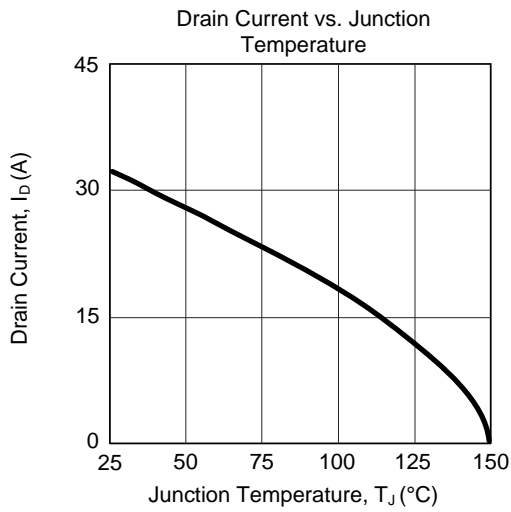
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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