



## UF634-HC

Power MOSFET

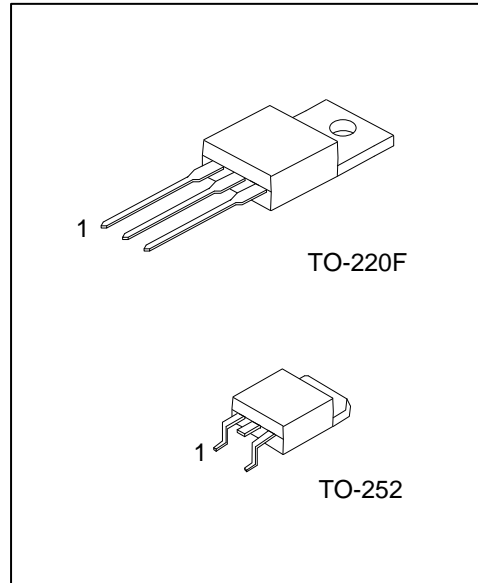
### ADVANCED POWER MOSFET

#### DESCRIPTION

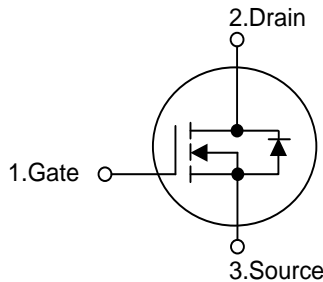
The UTC **UF634-HC** is a N-channel Power MOSFET and it uses UTC advanced technology to provide customers with lower  $R_{DS(ON)}$ , improved gate charge and so on.

#### FEATURES

- \*  $R_{DS(ON)} \leq 0.45 \Omega @ V_{GS}=10V, I_D=4.0A$
- \* Lower Input Capacitance
- \* Improved Gate Charge
- \* Lower Leakage Current:  $10\mu A (MAX.) @ V_{DS} = 250V$
- \* Avalanche Rugged Technology
- \* Rugged Gate Oxide Technology
- \* Extended Safe Operating Area



#### SYMBOL



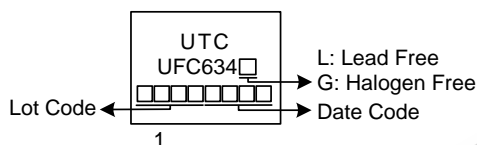
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF634L-TF3-T	UF634G-TF3-T	TO-220F	G	D	S	Tube
UF634L-TN3-R	UF634G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UF634G-TF3-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) TF3: TO-220F, 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<sub>C</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Gate-to-Source Voltage	V <sub>GS</sub>	±30	V
Drain-to-Source Voltage	V <sub>DSS</sub>	250	V
Continuous Drain Current	I <sub>D</sub>	8.1	A
Drain Current-Pulsed (Note 2)	I <sub>DM</sub>	32.4	A
Single Pulsed Avalanche Energy (Note 3)	E <sub>AS</sub>	217	mJ
Power Dissipation	TO-220F	34	W
	TO-252	50	W
Operating Junction Temperature	T <sub>J</sub>	+150	°C
Storage Temperature	T <sub>STG</sub>	-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=30mH, I<sub>AS</sub>=3.8A, V<sub>DD</sub>=50V, R<sub>G</sub>=27 Ω, Starting T<sub>J</sub>=25°C

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	TO-220F	62.5	°C/W
	TO-252	110	°C/W
Junction to Case	TO-220F	3.67	°C/W
	TO-252	2.5 (Note)	°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)

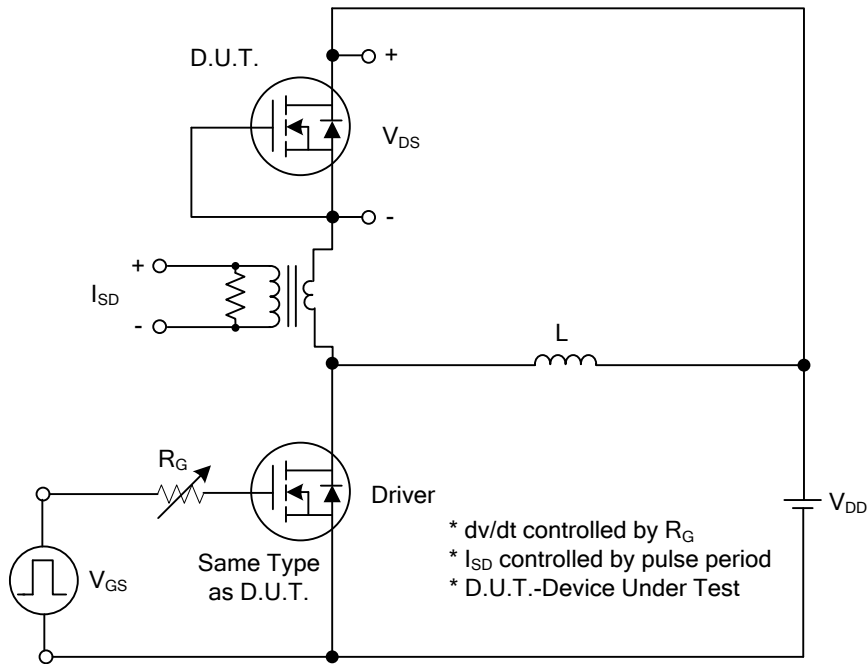
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$	250			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=250\text{V}$			10	$\mu\text{A}$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=4.0\text{A}$			0.45	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		435		pF
Output Capacitance	$C_{OSS}$			72		pF
Reverse Transfer Capacitance	$C_{RSS}$			5		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}$ , $V_{DS}=200\text{V}$ , $I_D=8.1\text{A}$ (Note 1, 2)		10		nC
Gate to Source Charge	$Q_{GS}$			3		nC
Gate to Drain Charge	$Q_{GD}$			1.8		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=100\text{V}$ , $I_D=8.1\text{A}$ , $R_G=25\Omega$ (Note 1, 2)		7		ns
Rise Time	$t_R$			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			26		ns
Fall-Time	$t_F$			19		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				8.1	A
Pulsed-Source Current (Note 1)	$I_{SM}$				32.4	A
Drain-Source Diode Forward Voltage (Note 2)	$V_{SD}$	$I_S=8.1\text{A}$ , $V_{GS}=0\text{V}$ , $T_J=25^\circ\text{C}$			1.5	V
Reverse Recovery Time (Note 1)	$t_{rr}$	$I_S=6.0\text{A}$ , $V_{GS}=0\text{V}$ , $di_F/dt=100\text{A}/\mu\text{s}$		115		ns
Reverse Recovery Charge	$Q_{rr}$			1.05		$\mu\text{C}$

Note: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

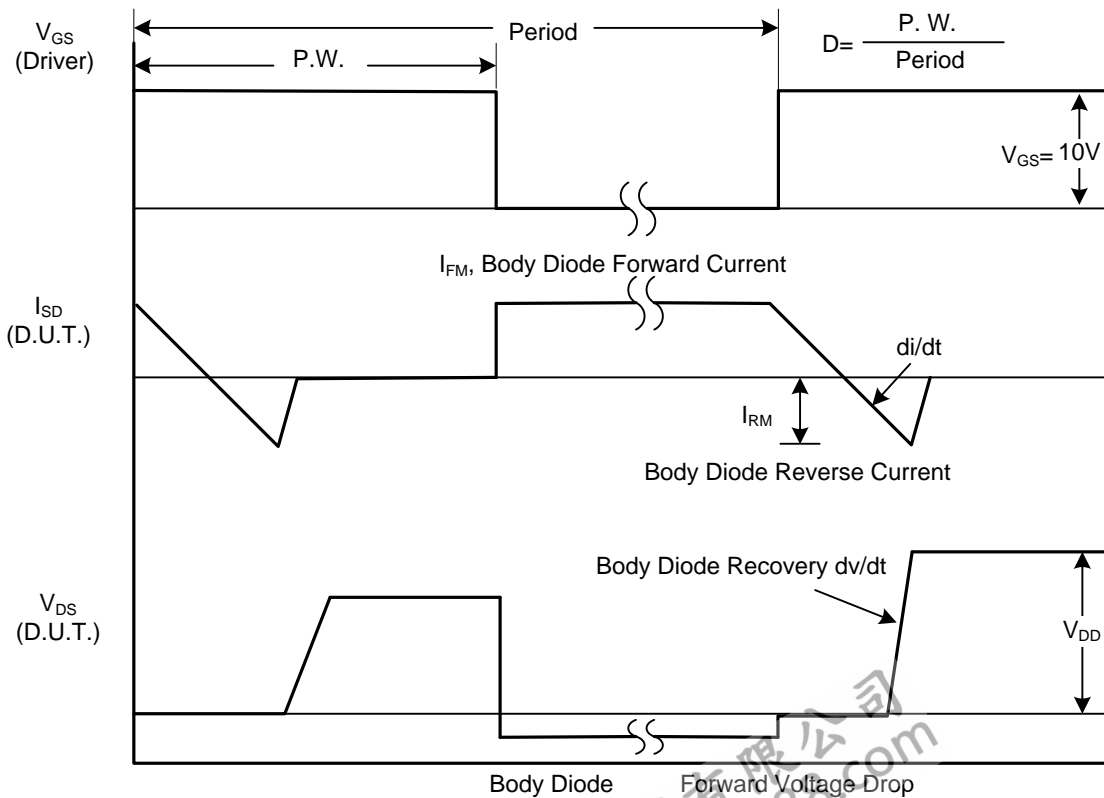
2. Pulse Test: Pulse Width =  $250\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

3. Essentially Independent of Operating Temperature.

■ TEST CIRCUITS AND WAVEFORMS

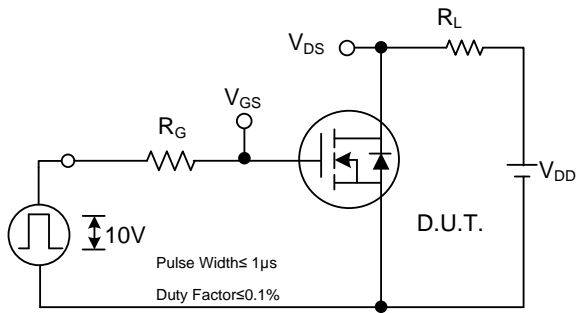


Peak Diode Recovery dv/dt Test Circuit

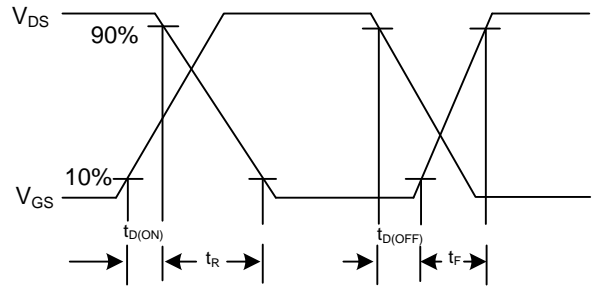


Peak Diode Recovery dv/dt Waveforms

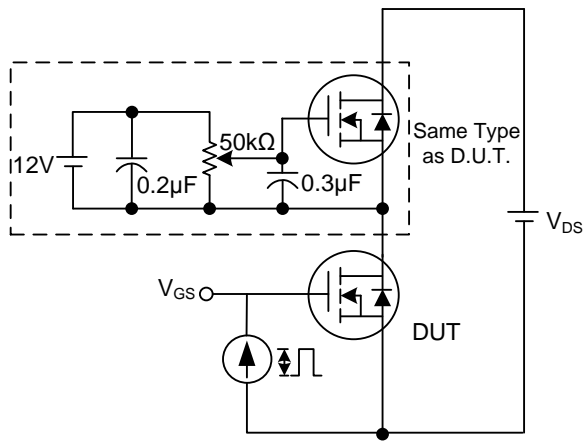
## TEST CIRCUITS AND WAVEFORMS



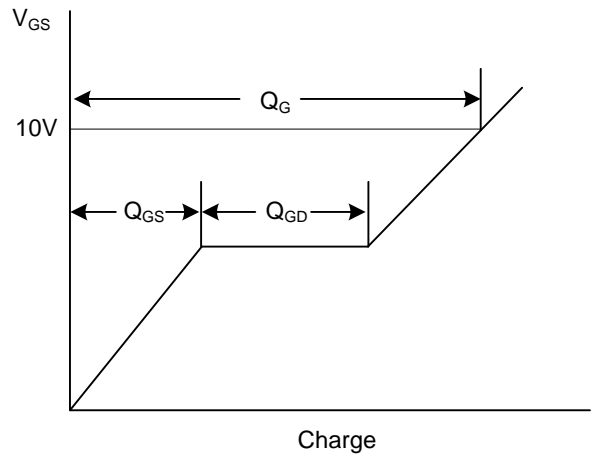
Switching Test Circuit



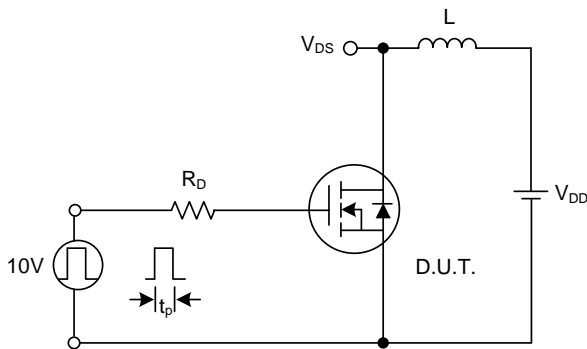
Switching Waveforms



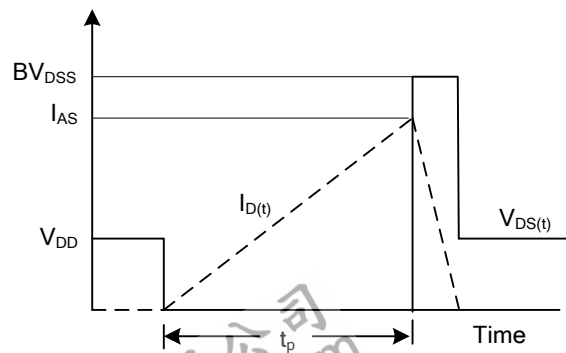
Gate Charge Test Circuit



Gate Charge Waveform

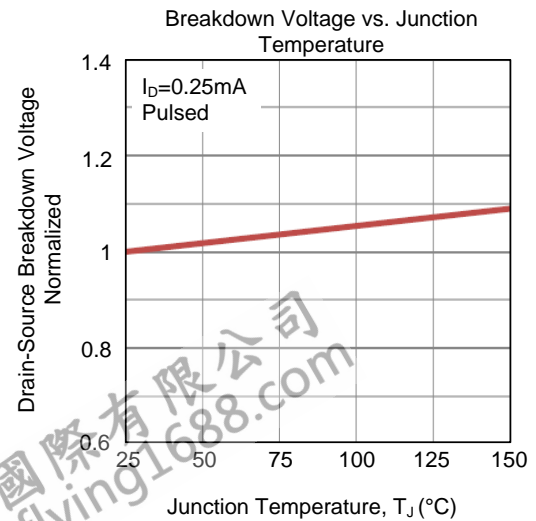
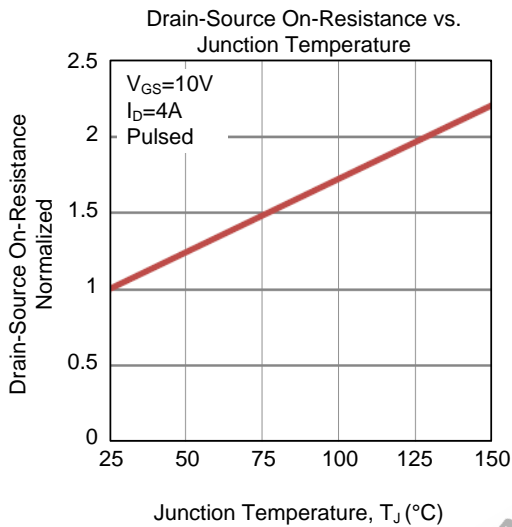
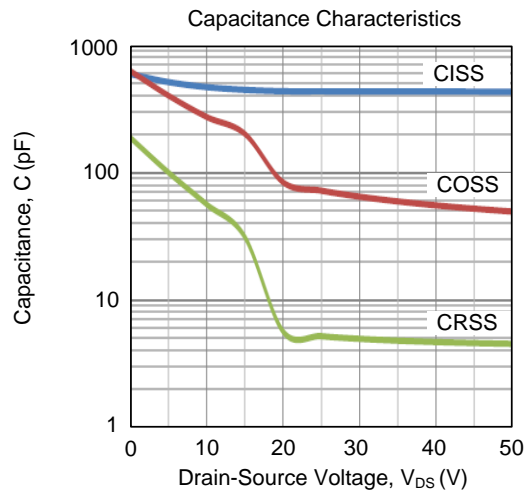
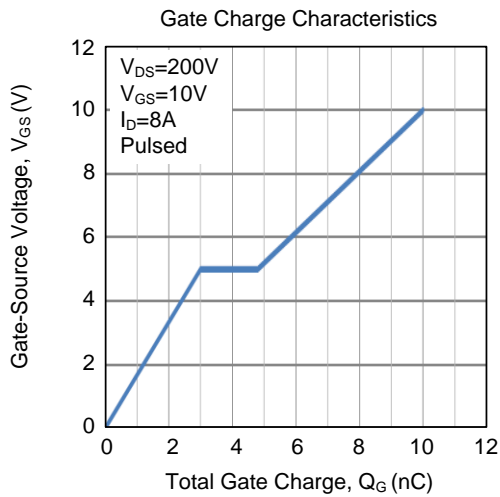
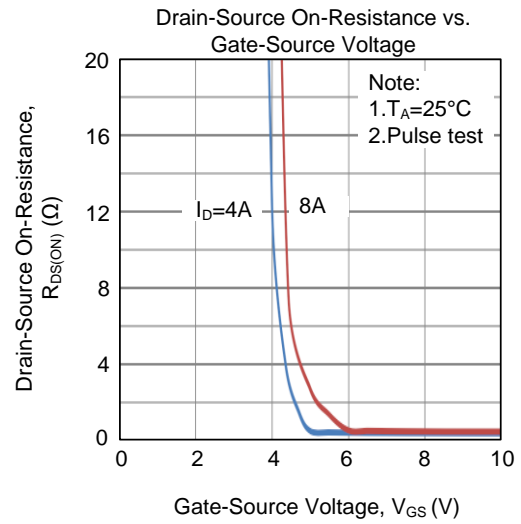
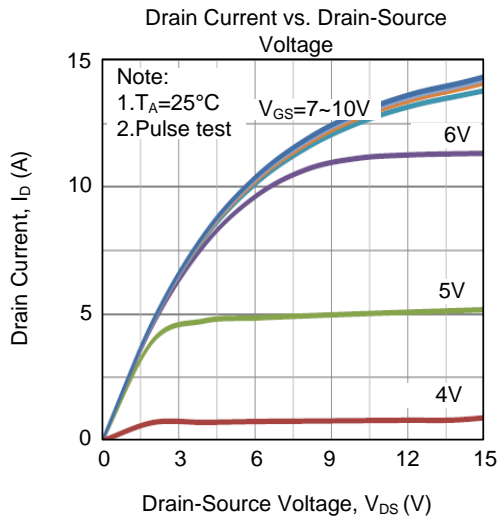


Unclamped Inductive Switching Test Circuit

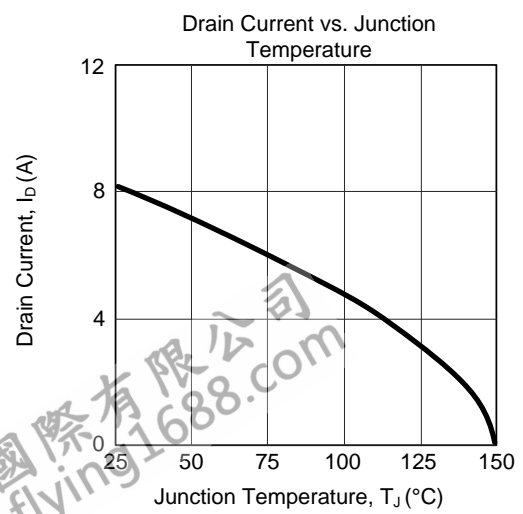
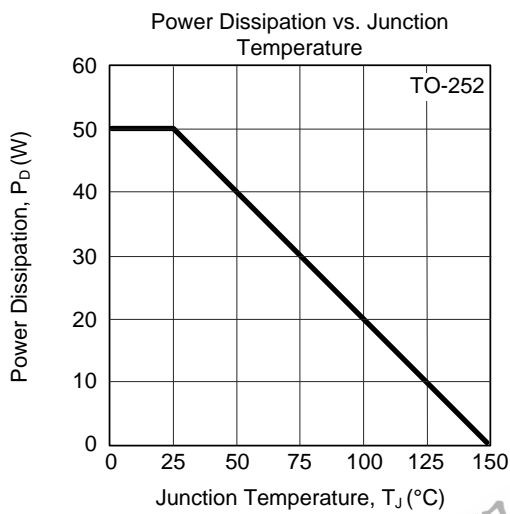
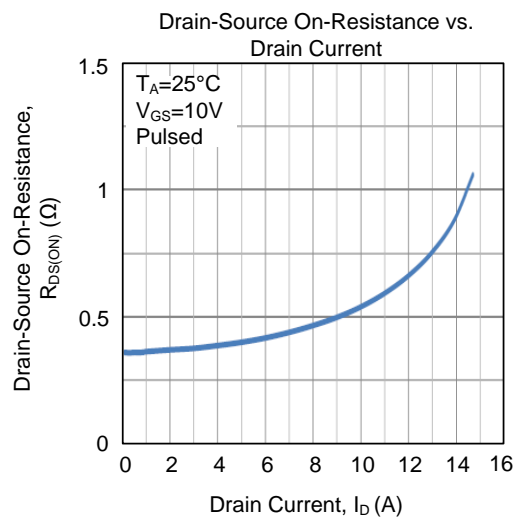
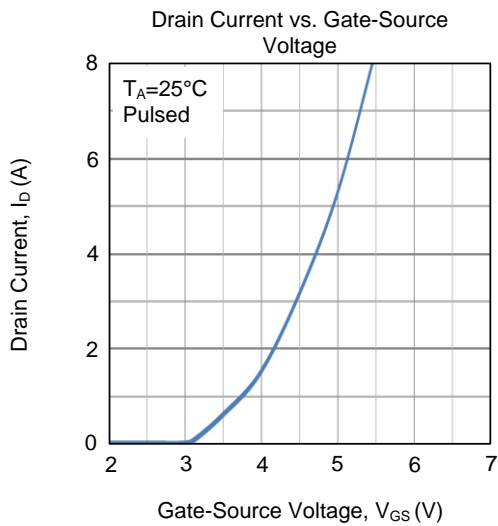
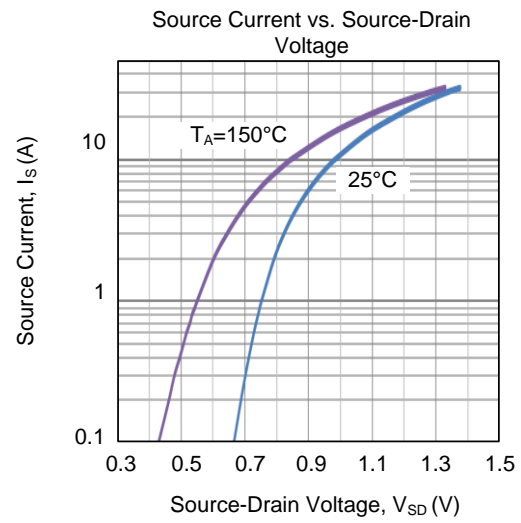
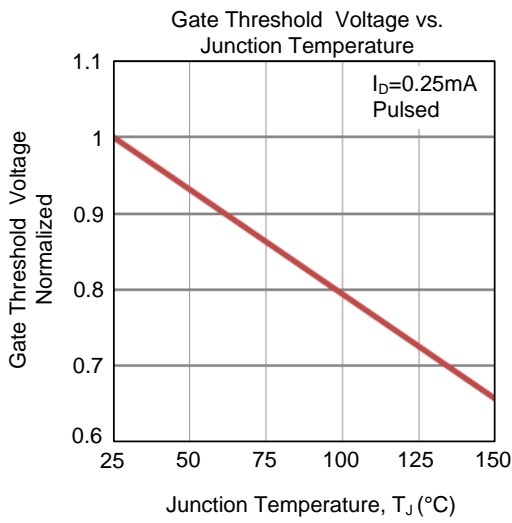


Unclamped Inductive Switching Waveforms

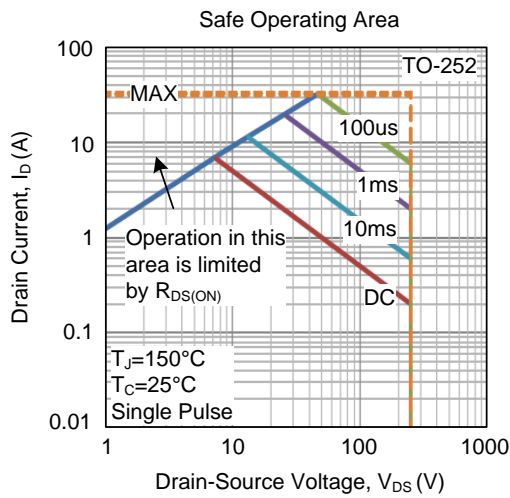
## TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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