



UT9564

Power MOSFET

-40V, -7.3A P-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

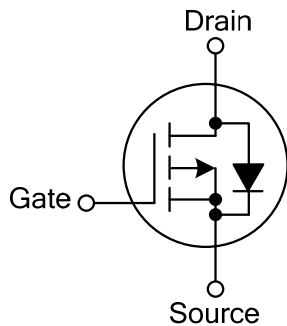
The UTC **UT9564** is a P-ch enhancement mode power MOSFET and it uses UTC perfect technology to provide customers with fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The UTC **UT9564** is ideal for applications such as low voltage applications, DC/DC converters and all commercial-industrial surface mount applications.

FEATURES

- * Simple Drive Requirement
- * Fast Switching Speed
- * Low On-Resistance

SYMBOL

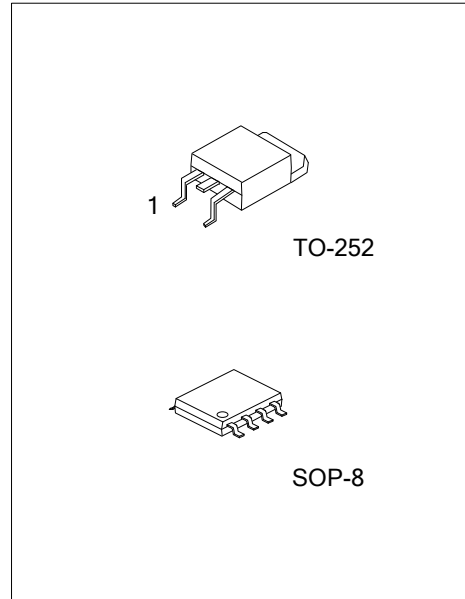


ORDERING INFORMATION

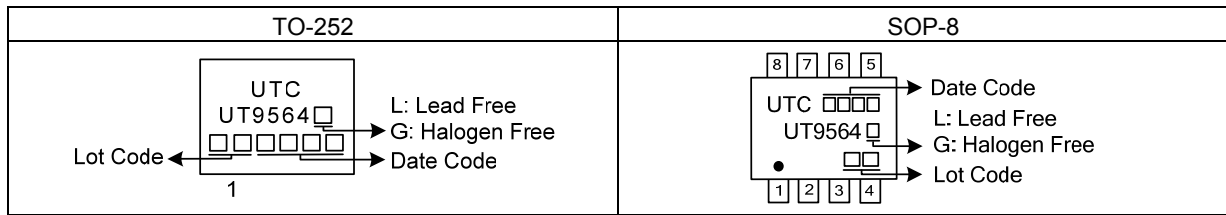
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT9564L-TN3-R	UT9564G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT9564L-S08-R	UT9564G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT9564G-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, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DS}	-40	V	
Gate-Source Voltage	V_{GS}	± 25	V	
Continuous Drain Current (Note 2)	I_D	$T_A=25^\circ\text{C}$	-7.3	A
		$T_A=70^\circ\text{C}$	-5.9	A
Pulsed Drain Current (Note 1)	I_{DM}	-30	A	
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	TO-252	50	W
		SOP-8	6.25	
Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$	

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 (Note 2)	θ_{JA}	TO-252	110	$^\circ\text{C/W}$
		SOP-8	150	

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

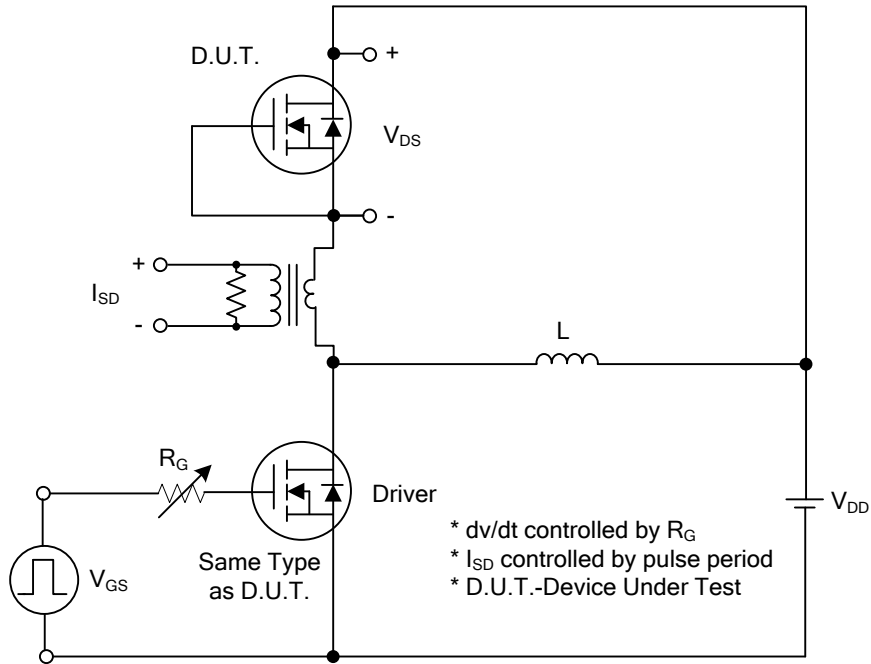
2. Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; 125°C/W when mounted on Min. copper pad.

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

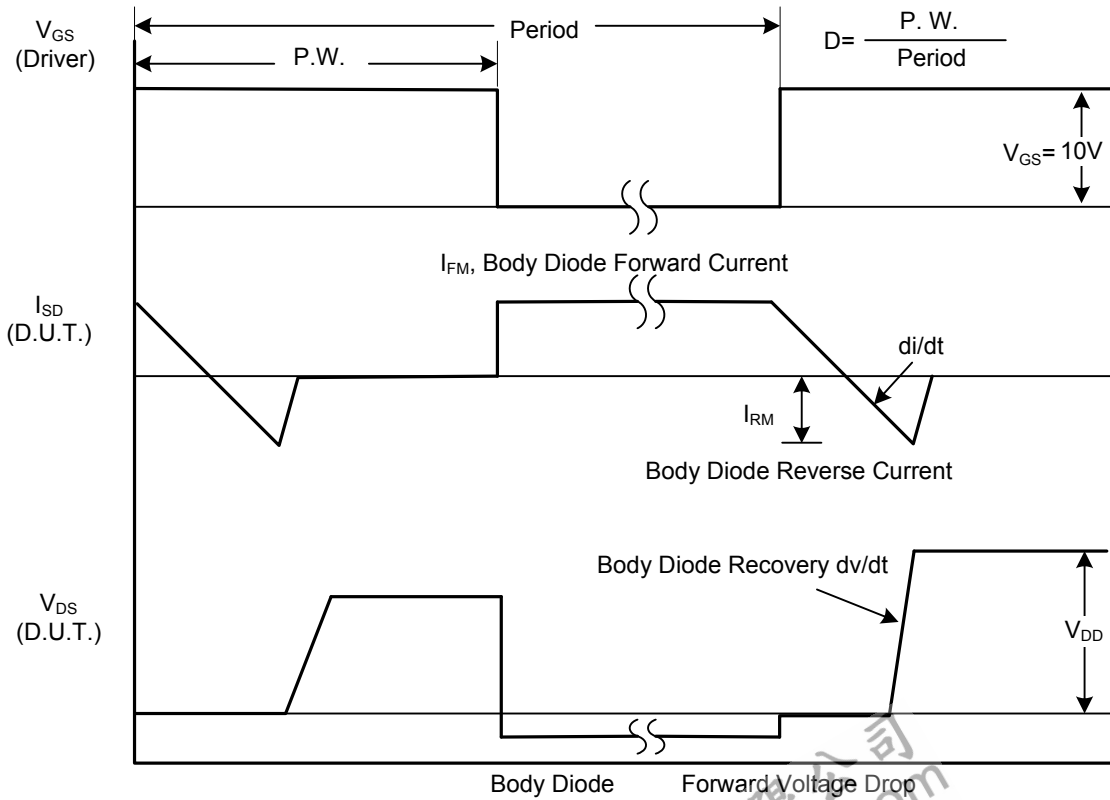
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}, V_{GS}=0\text{V}$	-40			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-40\text{V}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$			-1	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-1.0		-3.0	V
Static Drain-Source On-State Resistance (Note)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-7\text{A}$			28	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-5\text{A}$			40	
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$		2590		pF
Output Capacitance	C_{OSS}			283		pF
Reverse Transfer Capacitance	C_{RSS}			202		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note)	Q_G	$V_{GS}=-4.5\text{V}, V_{DS}=-20\text{V}, I_D=-7\text{A}$		27	43	nC
Gate to Source Charge	Q_{GS}			9		nC
Gate to Drain Charge	Q_{GD}			10		nC
Turn-ON Delay Time (Note)	$t_{D(ON)}$	$V_{GS}=-10\text{V}, V_{DS}=-20\text{V}, I_D=-7\text{A}, R_G=3.3\Omega$		5		ns
Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			68		ns
Fall-Time	t_F			43		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-7.3	A
Maximum Body-Diode Pulsed Current	I_{SM}				-30	A
Drain-Source Diode Forward Voltage (Note)	V_{SD}	$I_S=-7\text{A}, V_{GS}=0\text{V}$			-1.2	V
Reverse Recovery Time (Note)	t_{rr}	$I_S=-7\text{A}, V_{GS}=0\text{V}$		53		ns
Reverse Recovery Charge	Q_{rr}	$di/dt=100\text{A}/\mu\text{s}$		55		nC

Note: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

■ TEST CIRCUITS AND WAVEFORMS

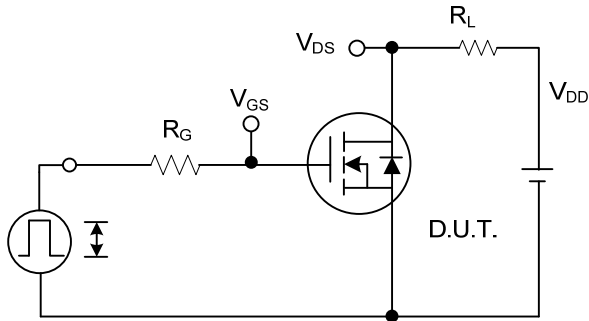


Peak Diode Recovery dv/dt Test Circuit

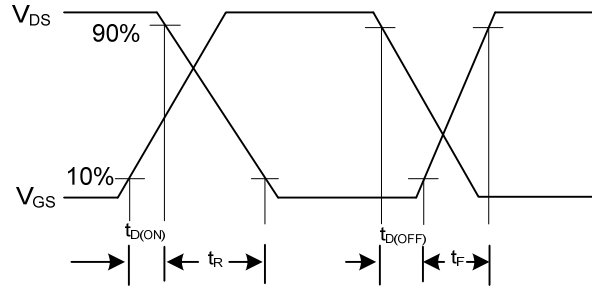


Peak Diode Recovery dv/dt Waveforms

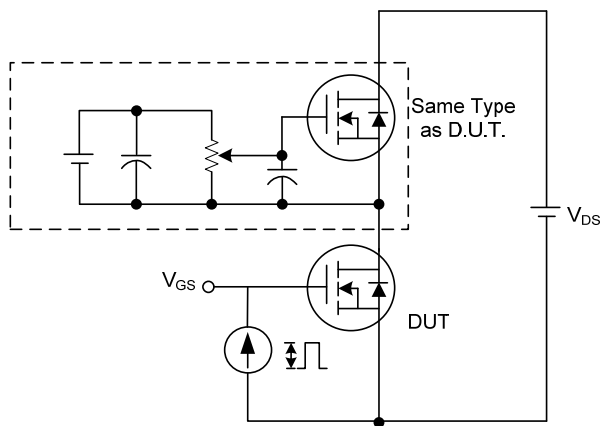
■ TEST CIRCUITS AND WAVEFORMS



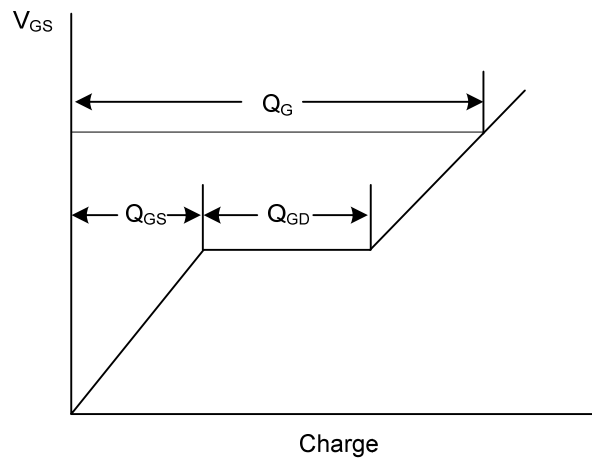
Switching Test Circuit



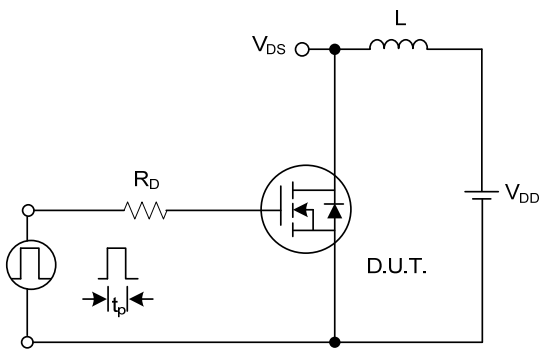
Switching Waveforms



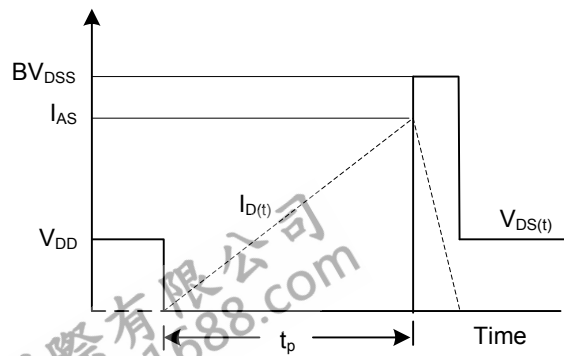
Gate Charge Test Circuit



Gate Charge Waveform

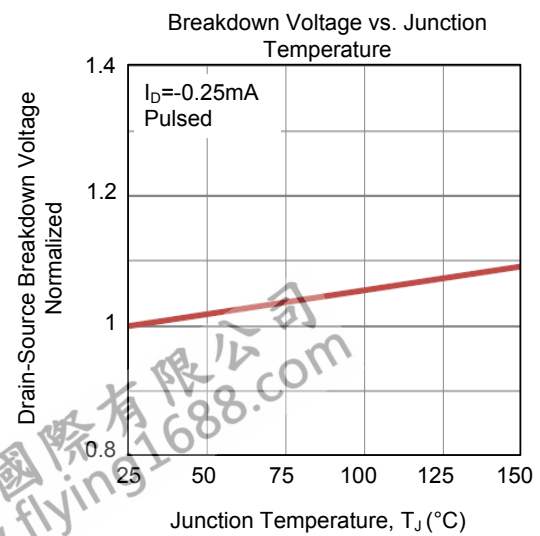
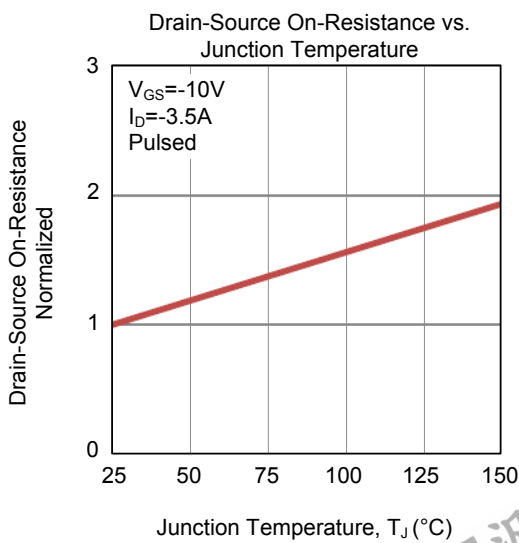
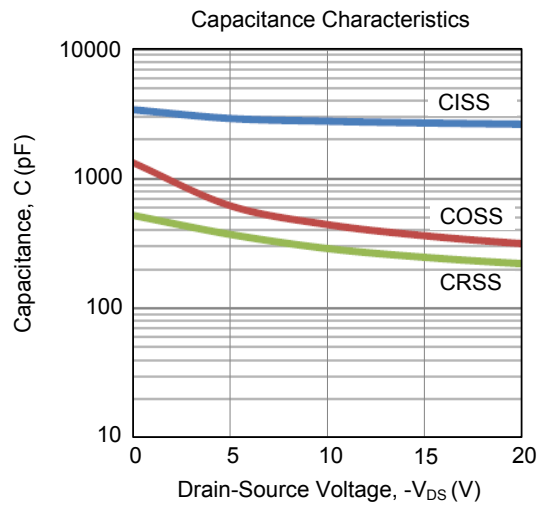
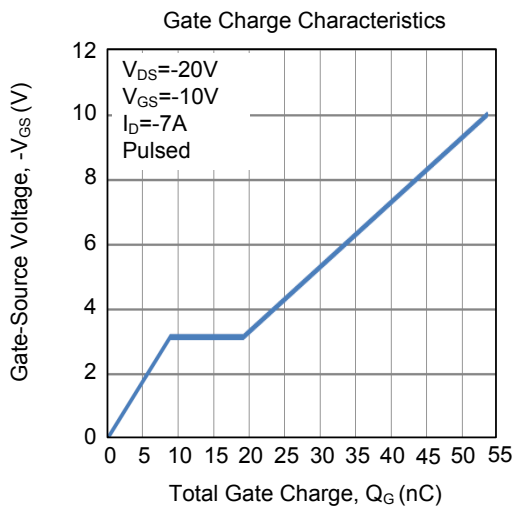
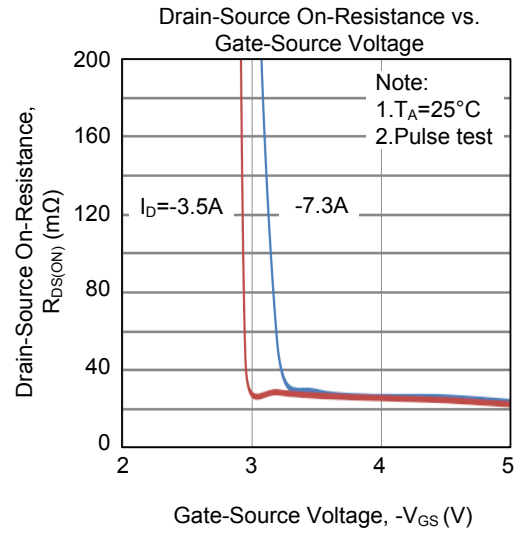
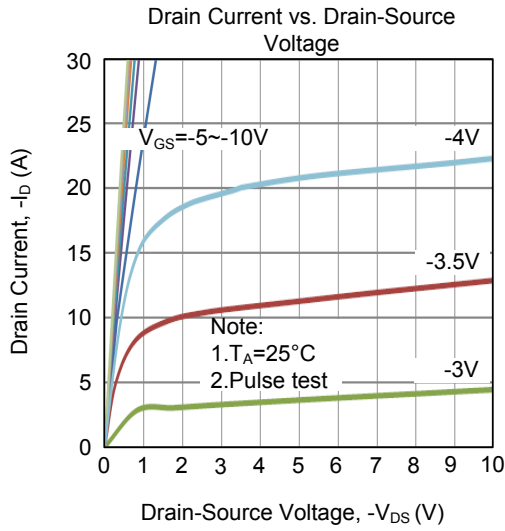


Unclamped Inductive Switching Test Circuit

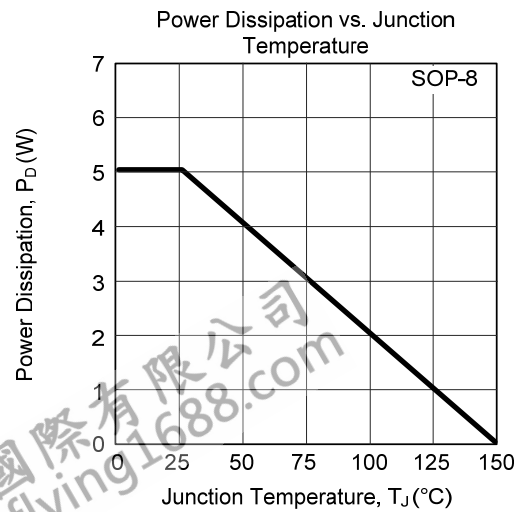
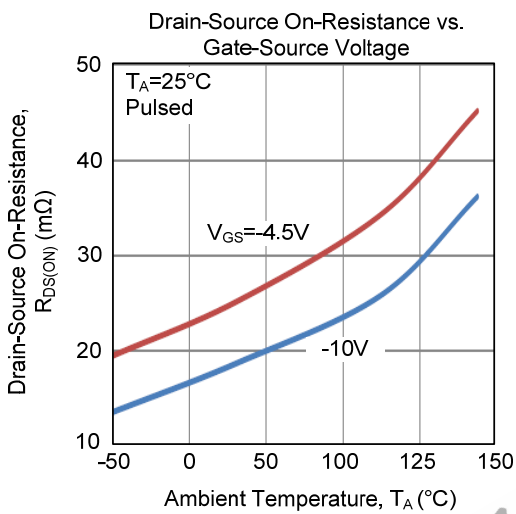
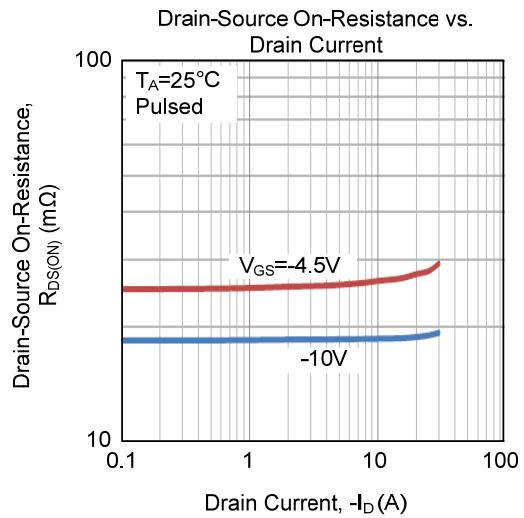
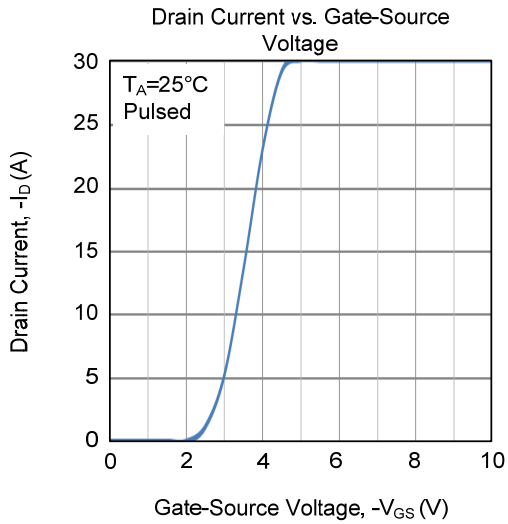
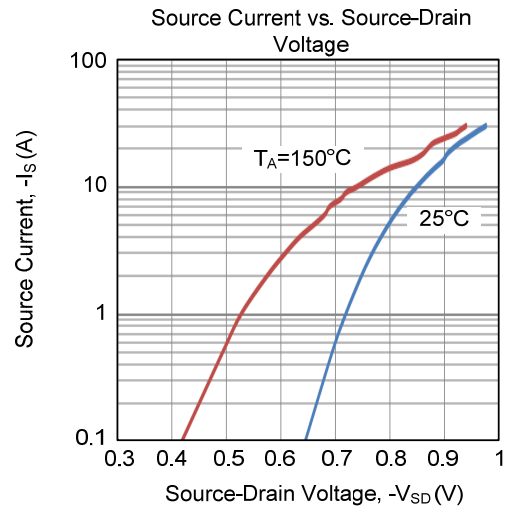
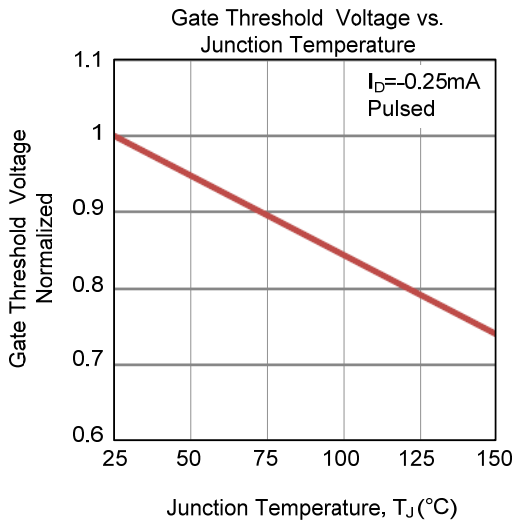


Unclamped Inductive Switching Waveforms

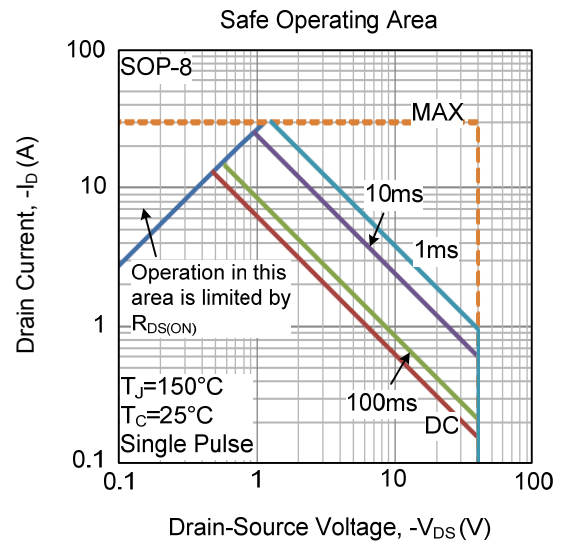
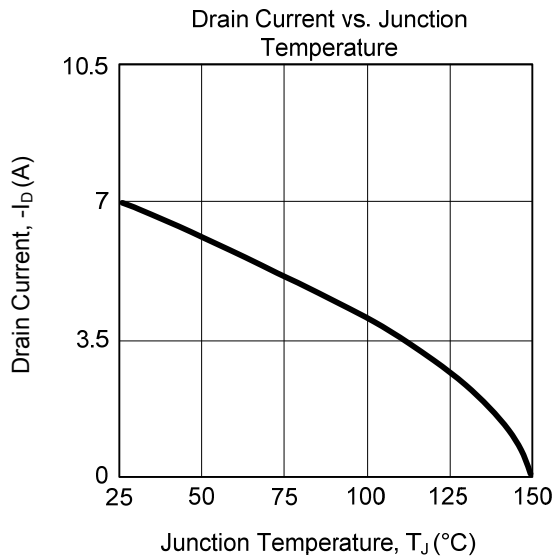
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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