



UT6898

Power MOSFET

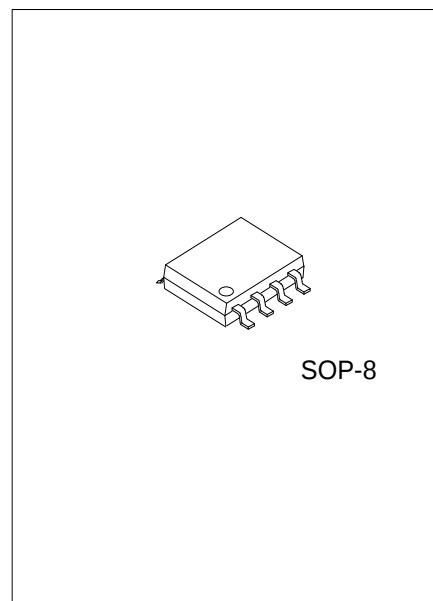
N-CHANNEL ENHANCEMENT

DESCRIPTION

The **UT6898** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

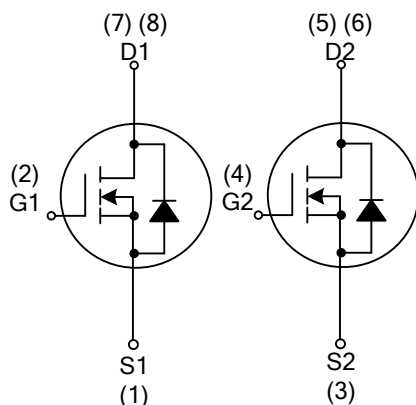
FEATURES

- * $R_{DS(ON)} \leq 14 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=9.4\text{A}$
- * $R_{DS(ON)} \leq 18 \text{ m}\Omega$ @ $V_{GS}=2.5\text{V}$, $I_D=8.3\text{A}$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified



SOP-8

SYMBOL



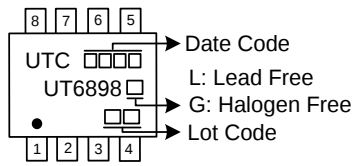
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT6898L-S08-R	UT6898G-S08-R	SOP-8	S	G	S	G	D	D	D	D	Tape Reel

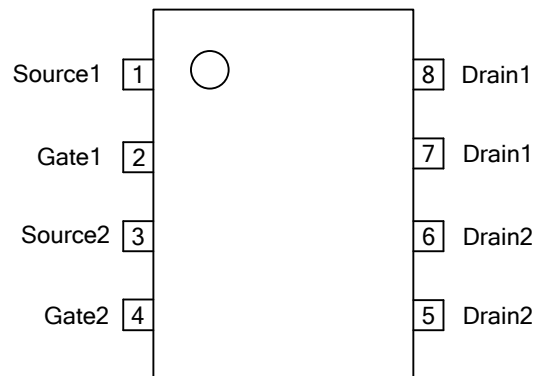
Note: Pin Assignment: G: Gate D: Drain S: Source

UT6898G-S08-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



PIN CONFIGURATION



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	9.4	A
Pulsed Drain Current	I_{DM}	38	A
Maximum Power Dissipation	P_D	3.1 (Note)	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction-to-Case	θ_{JC}	40	$^{\circ}\text{C/W}$

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

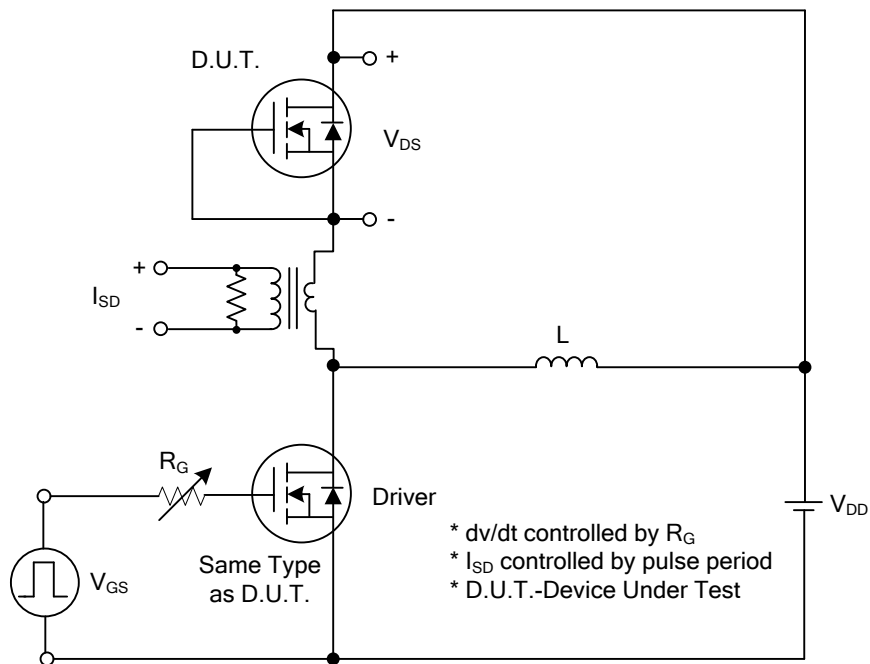
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V, V _{DS} =16V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V,			±100	nA
ON CHARACTERISTICS (Note 1)						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.5	1	1.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =9.4A		10	14	mΩ
		V _{GS} =2.5V, I _D =8.3A		13	18	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =10V, f=1MHz		2100		pF
Output Capacitance	C _{OSS}			530		pF
Reverse Transfer Capacitance	C _{RSS}			450		pF
SWITCHING PARAMETERS (Note 1)						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =10V, I _D =9.4A		48		nC
Gate Source Charge	Q _{GS}			6.7		nC
Gate Drain Charge	Q _{GD}			1.6		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V,V _{DS} =10V, I _D =9.4A R _G =6Ω		7		ns
Turn-ON Rise Time	t _R			18		ns
Turn-OFF Delay Time	t _{D(OFF)}			52		ns
Turn-OFF Fall-Time	t _F			24		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				2.6	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9.4A (Note 1)			1.2	V

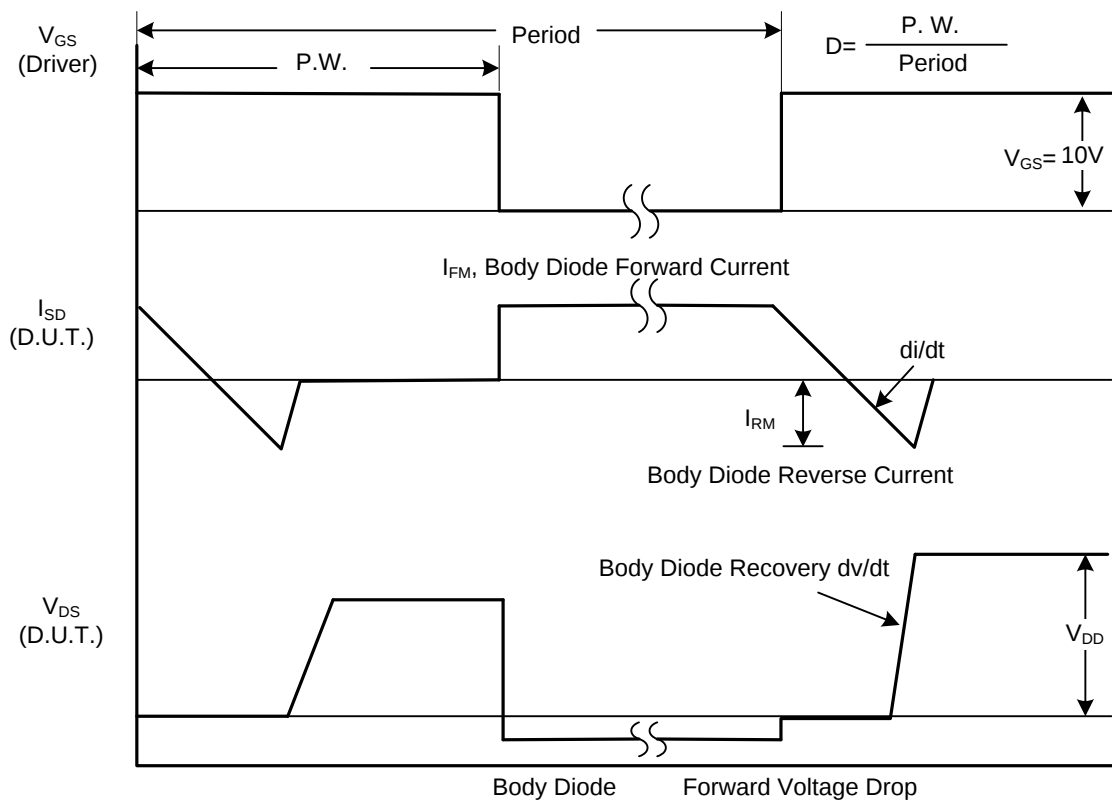
Notes: 1. Pulse Test: Pulse Width < 300ms, Duty Cycle < 2.0%

2. The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied

■ TEST CIRCUITS AND WAVEFORMS

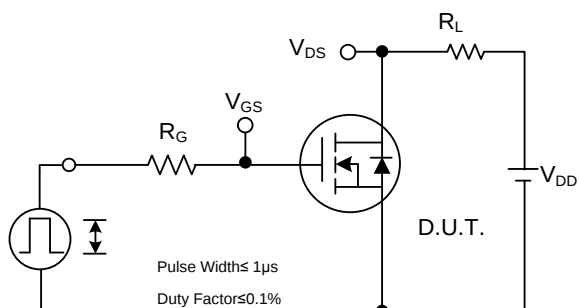


Peak Diode Recovery dv/dt Test Circuit

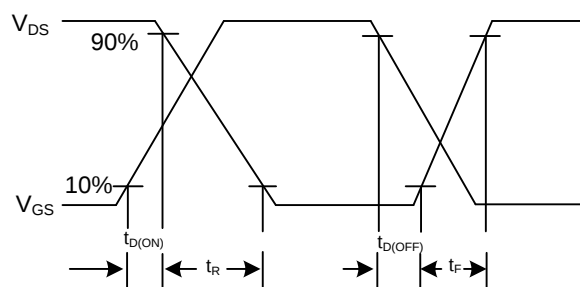


Peak Diode Recovery dv/dt Waveforms

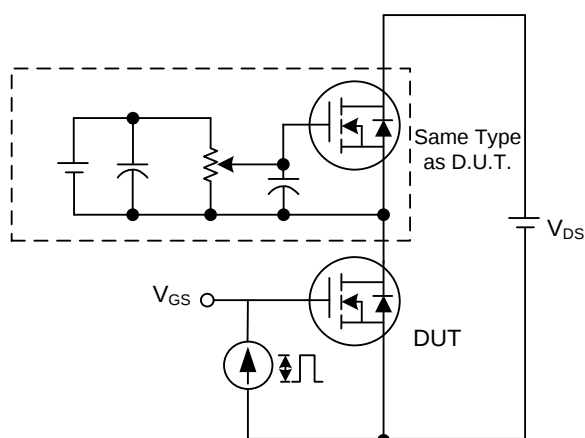
■ TEST CIRCUITS AND WAVEFORMS



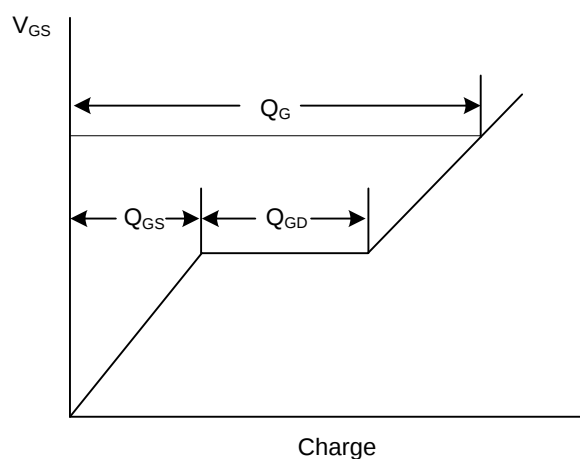
Switching Test Circuit



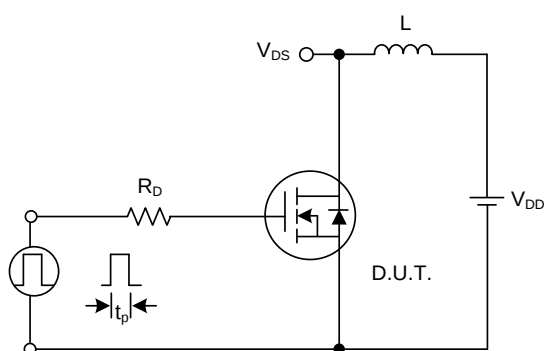
Switching Waveforms



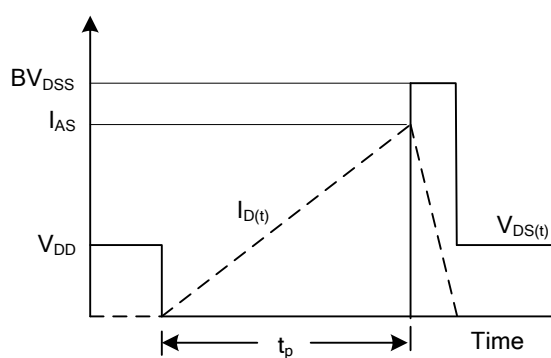
Gate Charge Test Circuit



Gate Charge Waveform

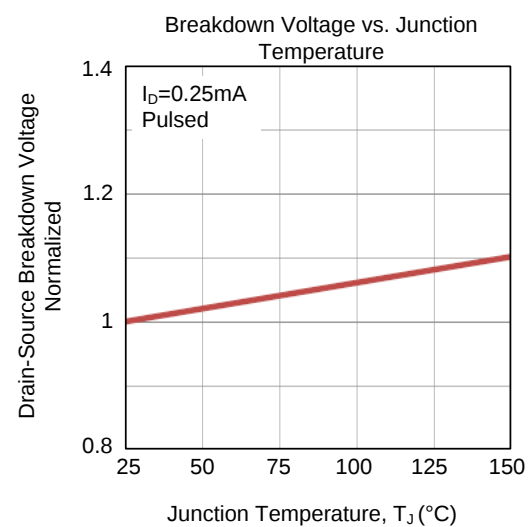
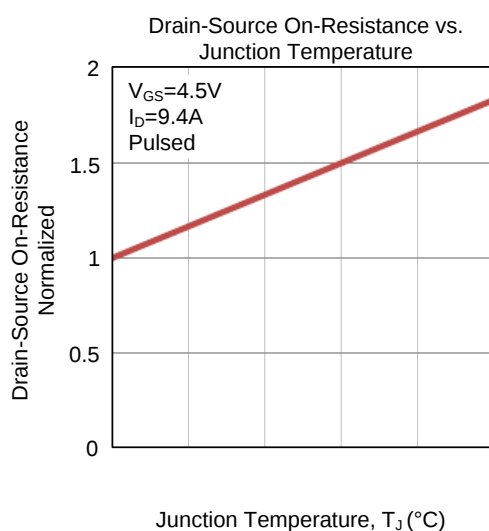
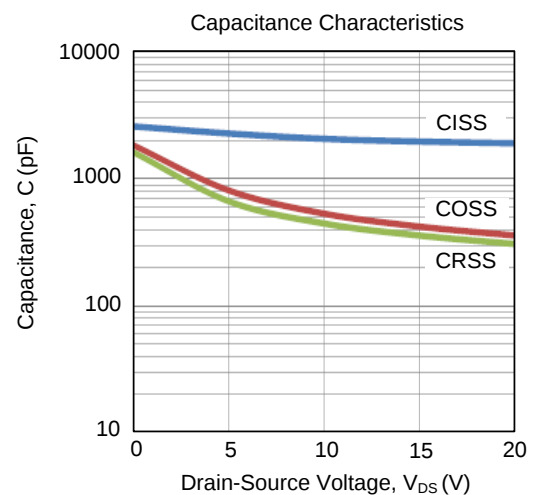
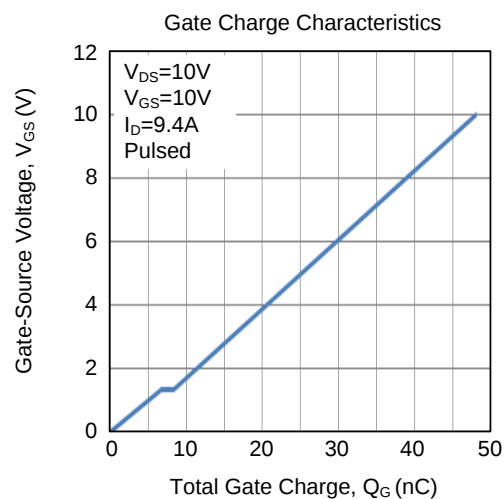
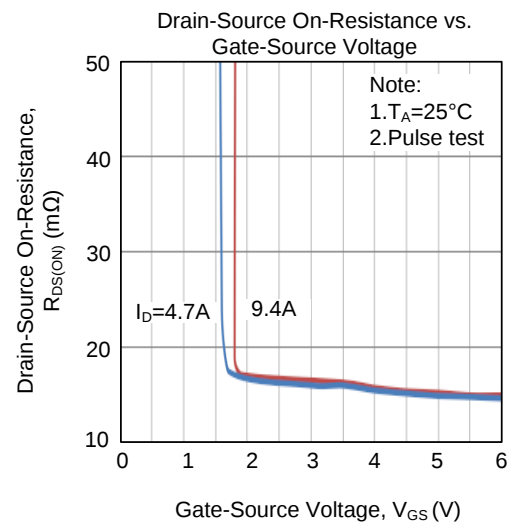
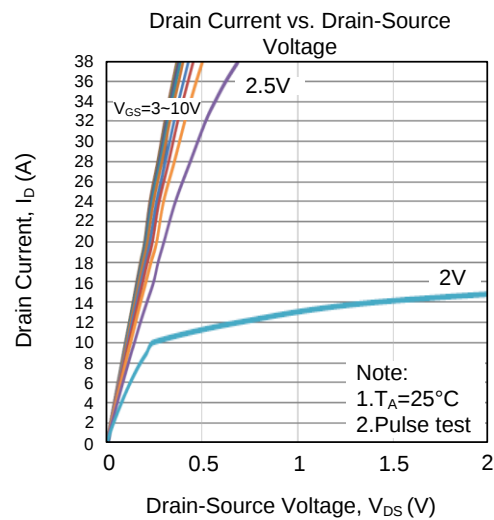


Unclamped Inductive Switching Test Circuit

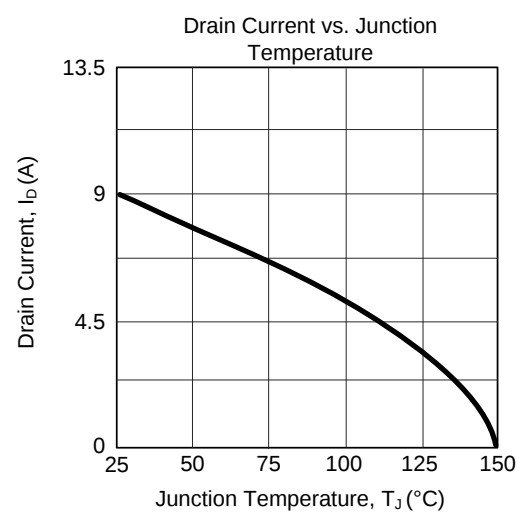
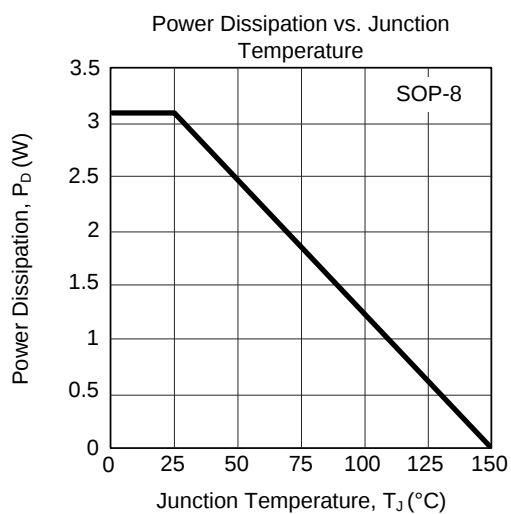
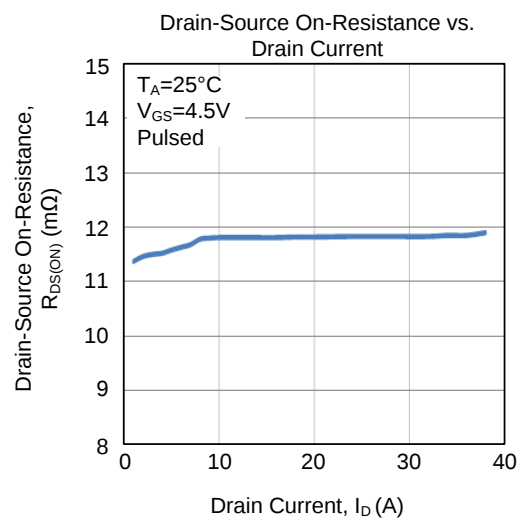
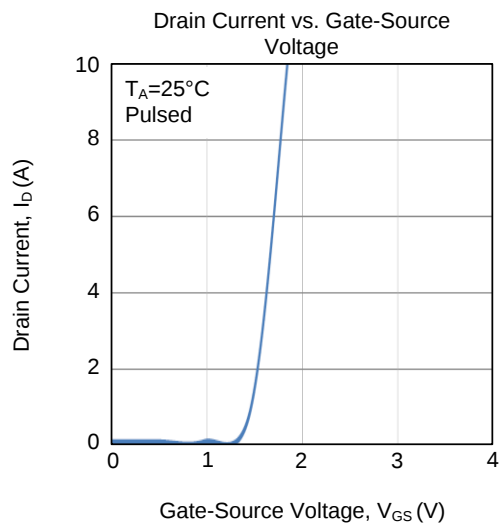
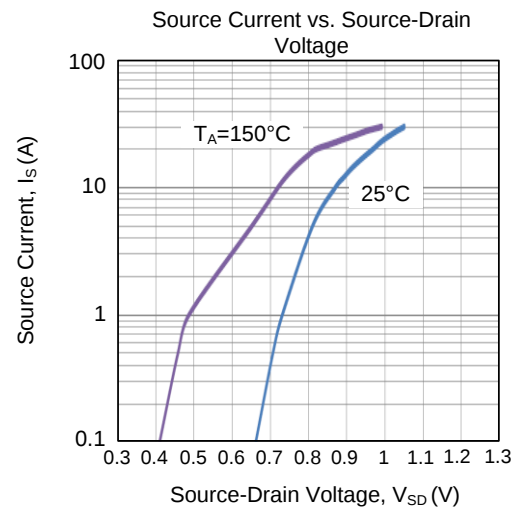
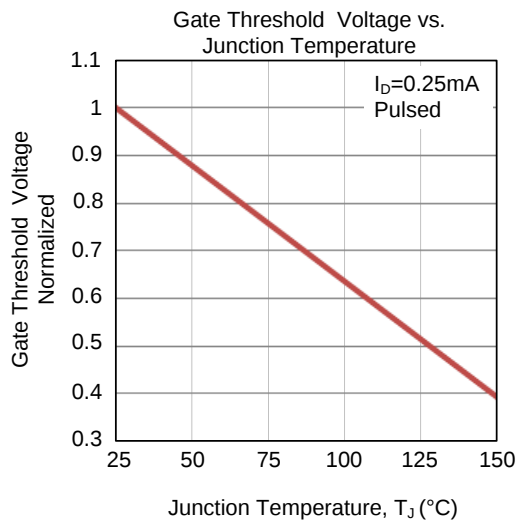


Unclamped Inductive Switching Waveforms

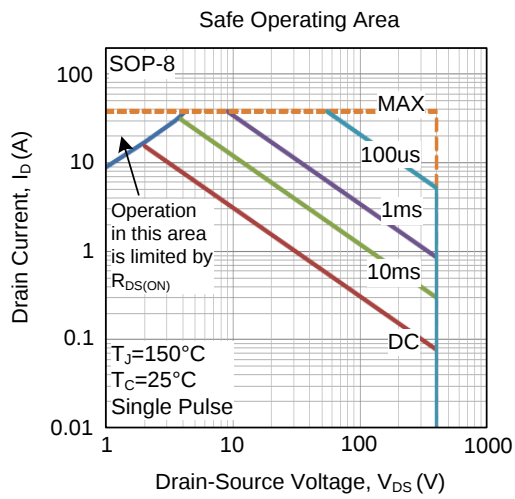
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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