



UT2305-LV

Power MOSFET

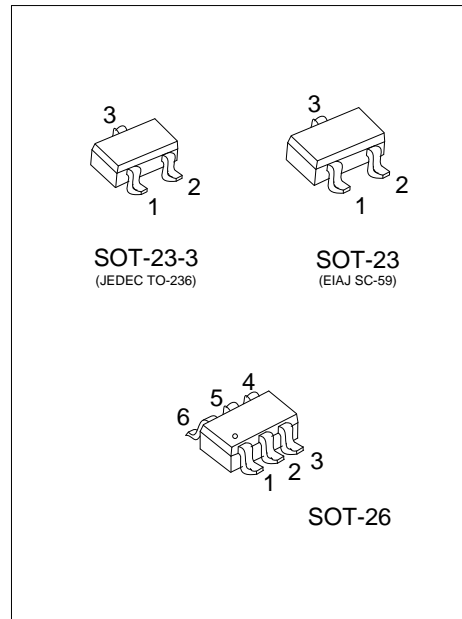
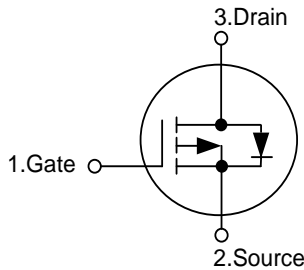
-4.2A, -20V P-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The UTC **UT2305-LV** is P-channel enhancement mode power MOSFET, designed in serried ranks. With fast switching speed, low on-resistance, favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT2305L-AE2-R	UT2305G-AE2-R	SOT-23-3	G	S	D	-	-	-	Tape Reel
UT2305L-AE3-R	UT2305G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT2305L-AG6-R	UT2305G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UT2305G-AE2-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23, AG6: SOT-26 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-23-3 / SOT-23	SOT-26

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V _{DS}	-20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current (Note 3) (T _A =25°C)	I _D	-4.2	A
Pulsed Drain Current (Note 1, 2)	I _{DM}	-10	A
Power Dissipation	SOT-23-3	0.83	W
	SOT-23	1.38	W
	SOT-26	1.1	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°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	RATING	UNIT
Junction to Ambient (Note 3)	SOT-23-3	150	°C/W
	SOT-23	90	°C/W
	SOT-26	110	°C/W

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

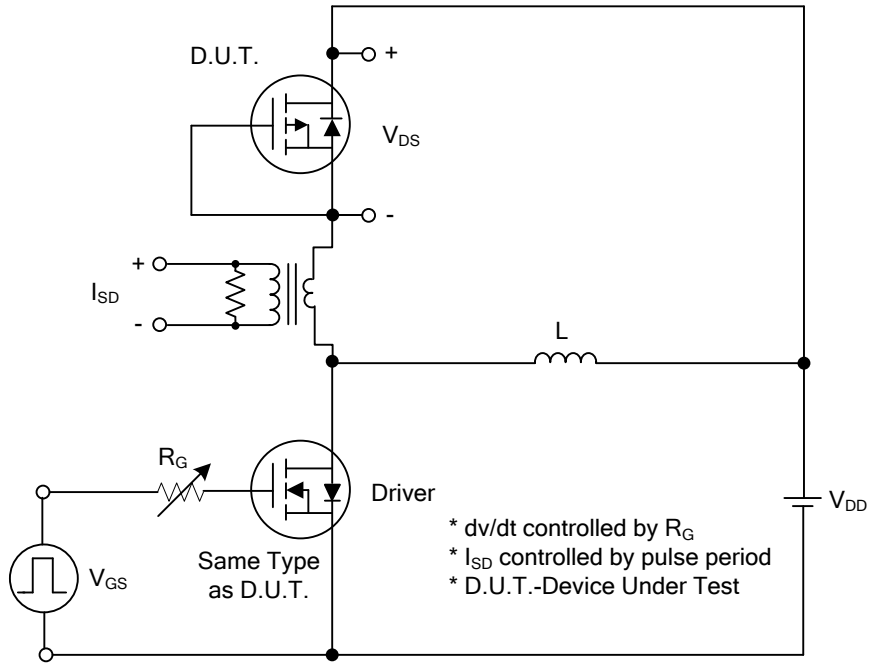
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250uA	-0.45		-1.2	V
Drain-Source On-State Resistance (Note 2)	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-4.2A			65	mΩ
		V _{GS} =-2.5V, I _D =-3.4A			90	mΩ
		V _{GS} =-1.8V, I _D =-2.0A			125	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-20V, f=1MHz		932		pF
Output Capacitance	C _{OSS}			100		pF
Reverse Transfer Capacitance	C _{RSS}			87		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q _G	V _{DS} =-4V, V _{GS} =-4.5V, I _D =-3.5A		12.5		nC
Gate-Source Charge	Q _{GS}			2.5		nC
Gate-Drain Charge	Q _{GD}			1.8		nC
Turn-ON Delay Time (Note 2)	t _{D(ON)}	V _{DS} =-4V, V _{GS} =-4.5V, I _D =-1A, R _G =6Ω, R _D =4Ω		10		ns
Turn-ON Rise Time	t _R			39		ns
Turn-OFF Delay Time	t _{D(OFF)}			42		ns
Turn-OFF Fall Time	t _F			28		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				-4.2	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				-10	A
Drain-Source Diode Forward Voltage(Note2)	V _{SD}	V _{GS} =0V, I _S =-1.2A			-1.2	V

Notes: 1. Pulse width limited by T_{J(MAX)}

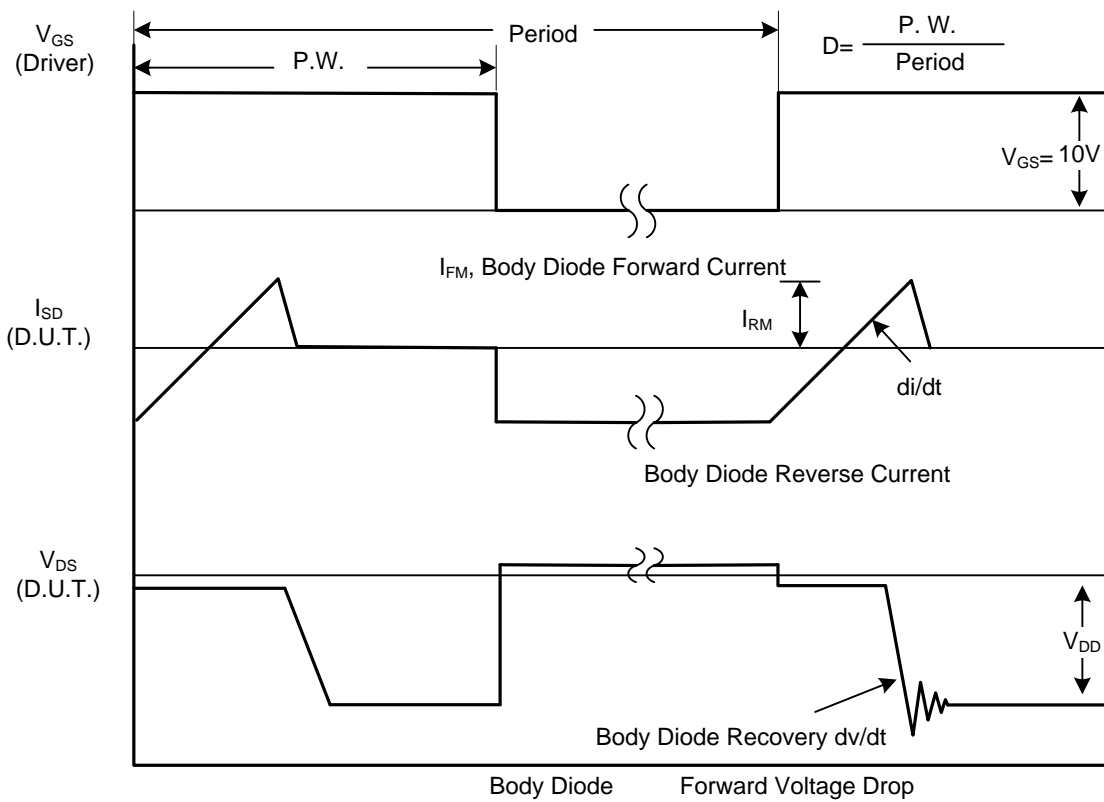
2. Pulse width ≤300μs, duty cycle≤2%.

3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min.

■ TEST CIRCUITS AND WAVEFORMS

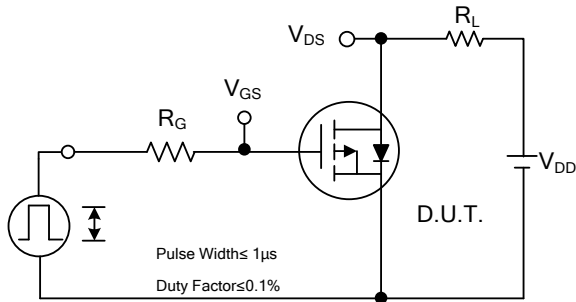


Peak Diode Recovery dv/dt Test Circuit

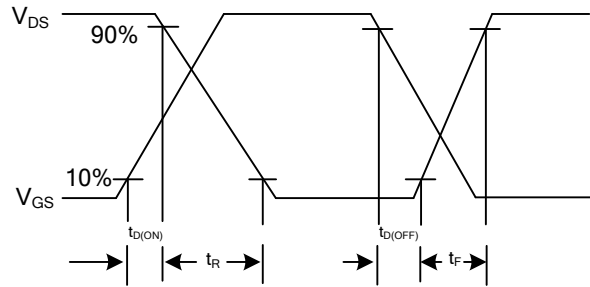


Peak Diode Recovery dv/dt Waveforms

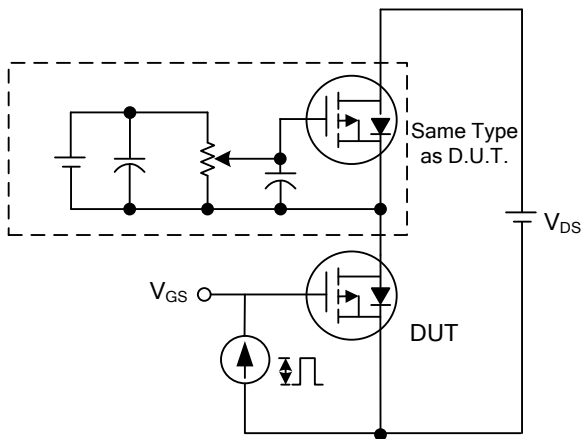
■ TEST CIRCUITS AND WAVEFORMS



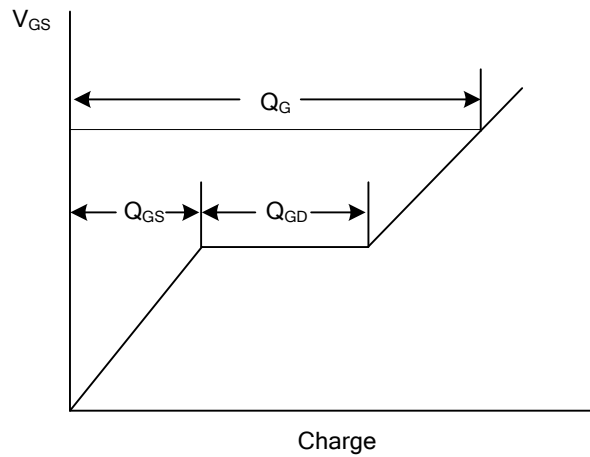
Switching Test Circuit



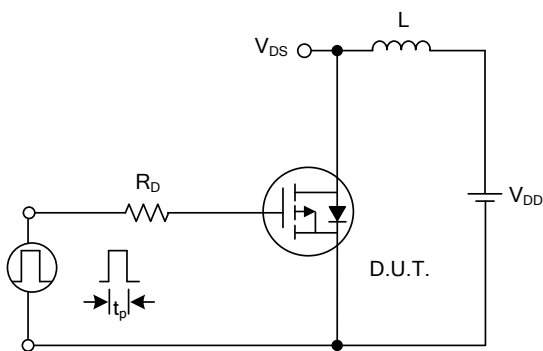
Switching Waveforms



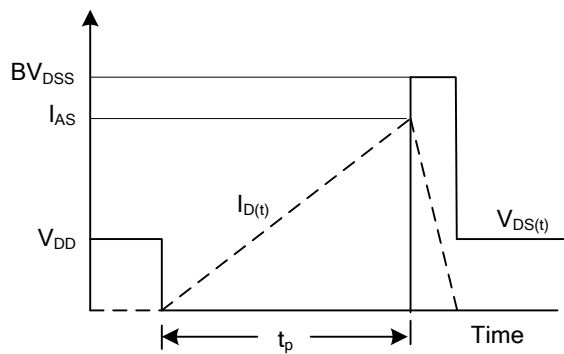
Gate Charge Test Circuit



Gate Charge Waveform

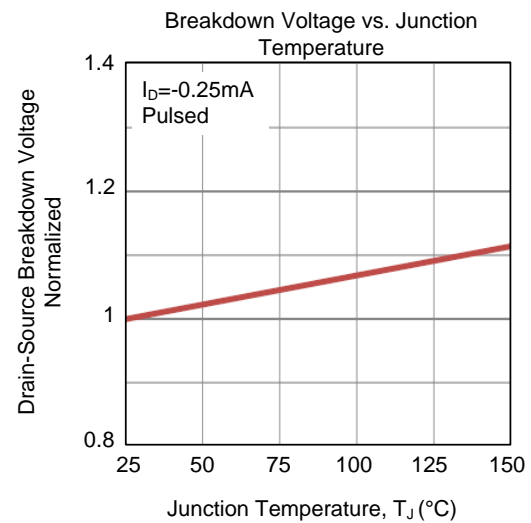
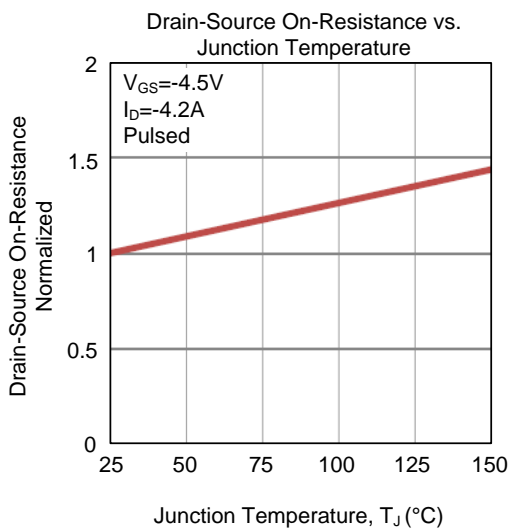
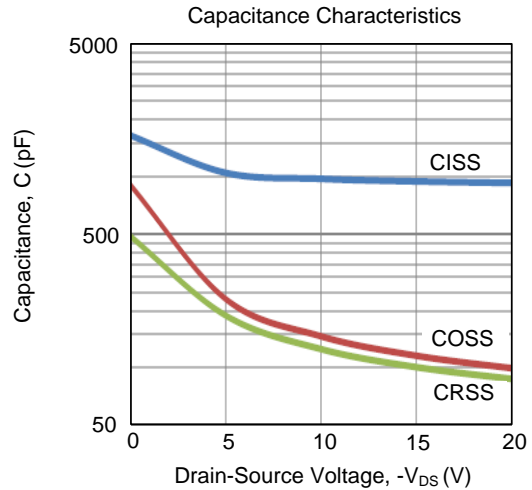
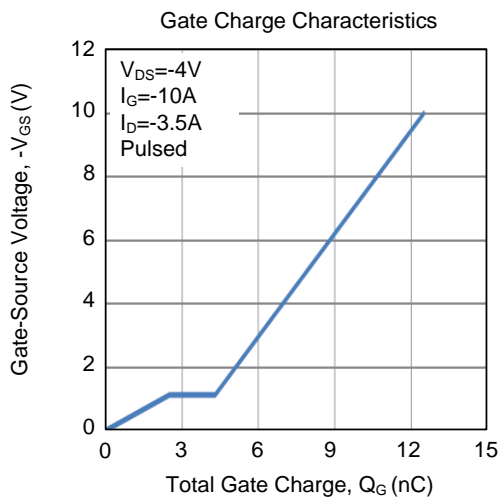
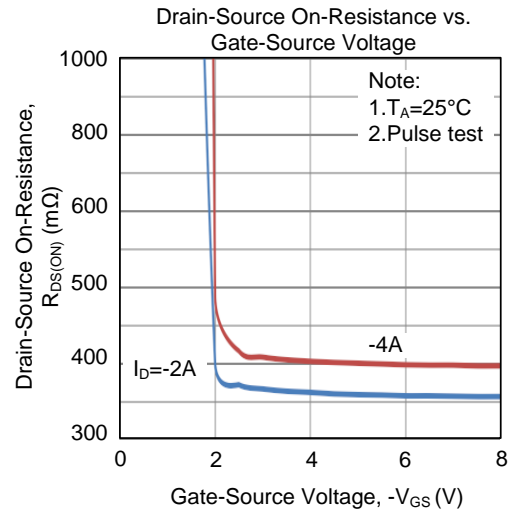
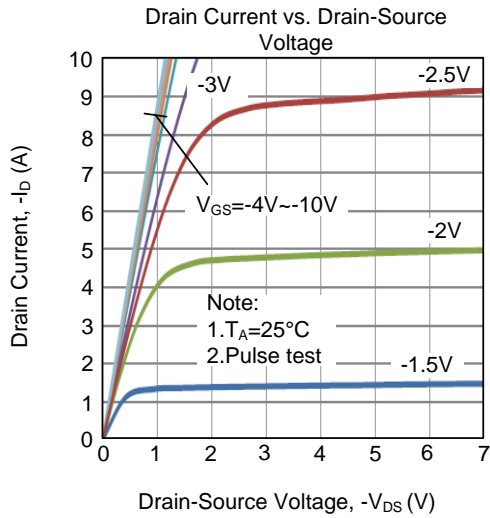


Unclamped Inductive Switching Test Circuit

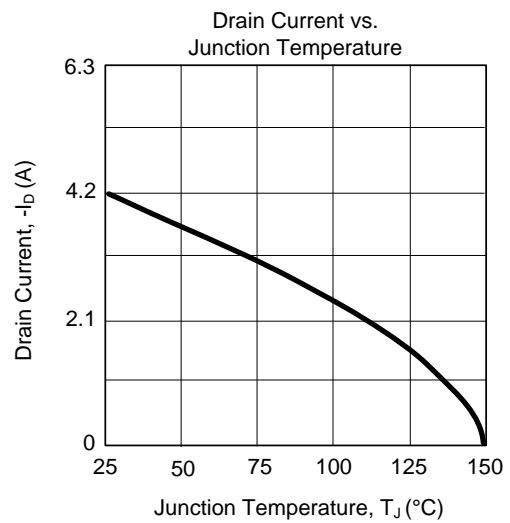
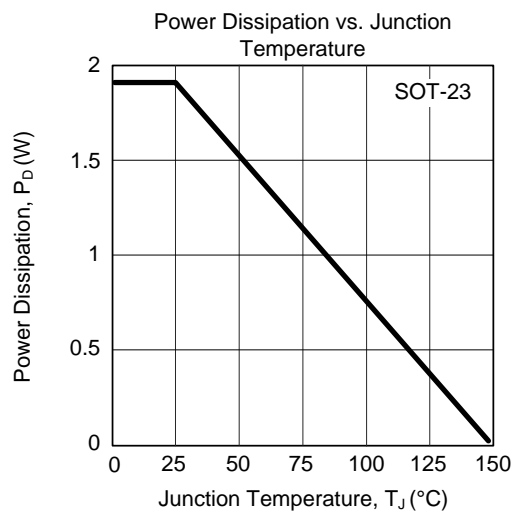
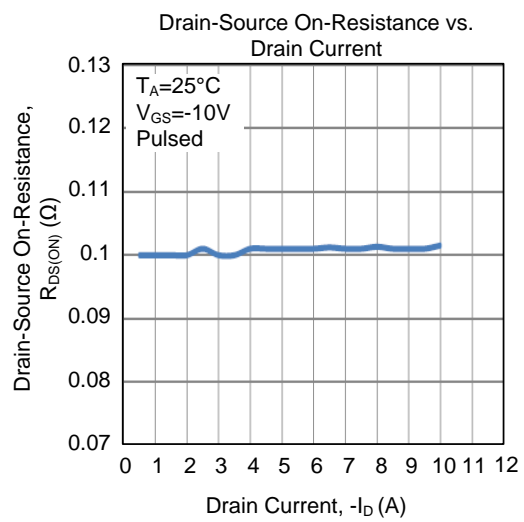
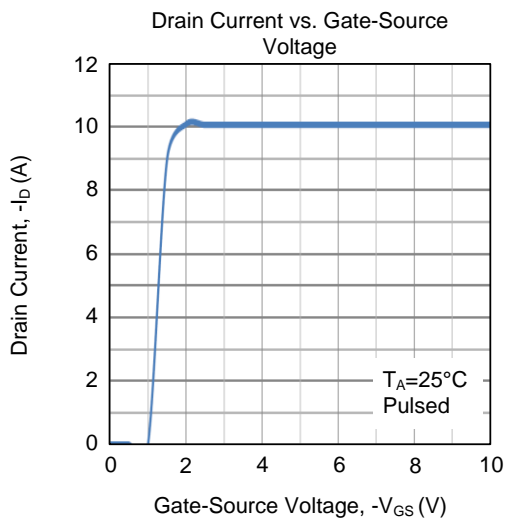
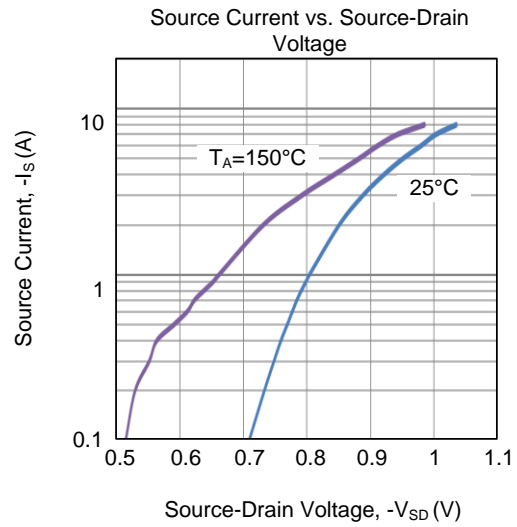
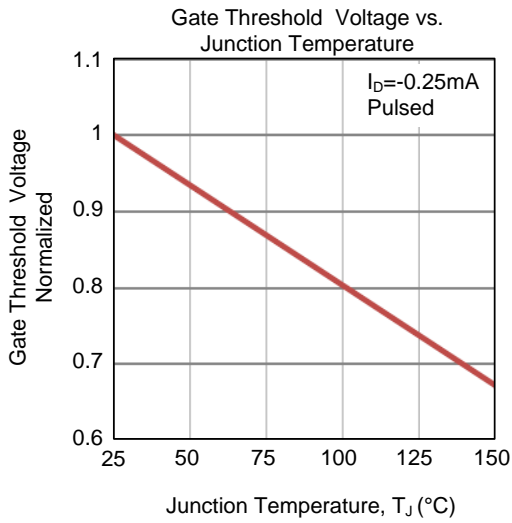


Unclamped Inductive Switching Waveforms

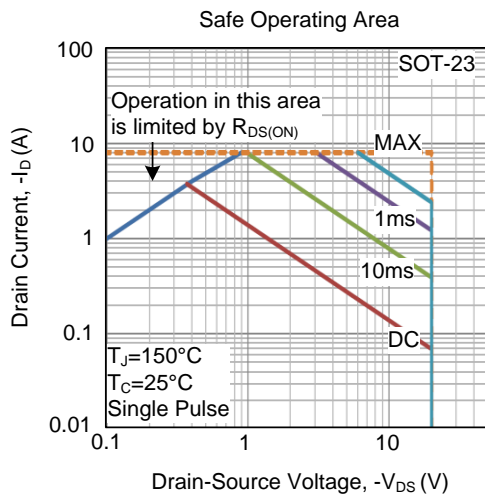
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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