



01N30

Power MOSFET

0.1A, 300V N-CHANNEL POWER MOSFET

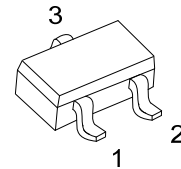
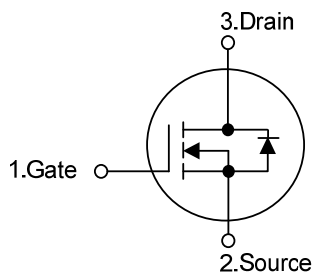
DESCRIPTION

The UTC **01N30** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and superior switching performance.

FEATURES

- * $R_{DS(ON)} \leq 7.5 \Omega$ @ $V_{GS}=10V$, $I_D=50mA$
- * High switching speed
- * 100% avalanche tested

SYMBOL



SOT-23
(EIAJ SC-59)

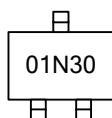
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
01N30L-AE3-R	01N30G-AE3-R	SOT-23	G	S	D	Tape Reel

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

01N30G-AE3-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	300	V
Gate-Source Voltage		V_{GS}	± 30	V
Drain Current	Continuous	I_D	0.1	A
	Pulsed (Note 2)	I_{DM}	0.2	A
Peak Diode Recovery dv/dt (Note 3)		dv/dt	3.7	V/ns
Power Dissipation ($T_A=25^\circ\text{C}$)		P_D	0.3	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $I_{SD} \leq 0.1\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	416	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	208	$^\circ\text{C}/\text{W}$

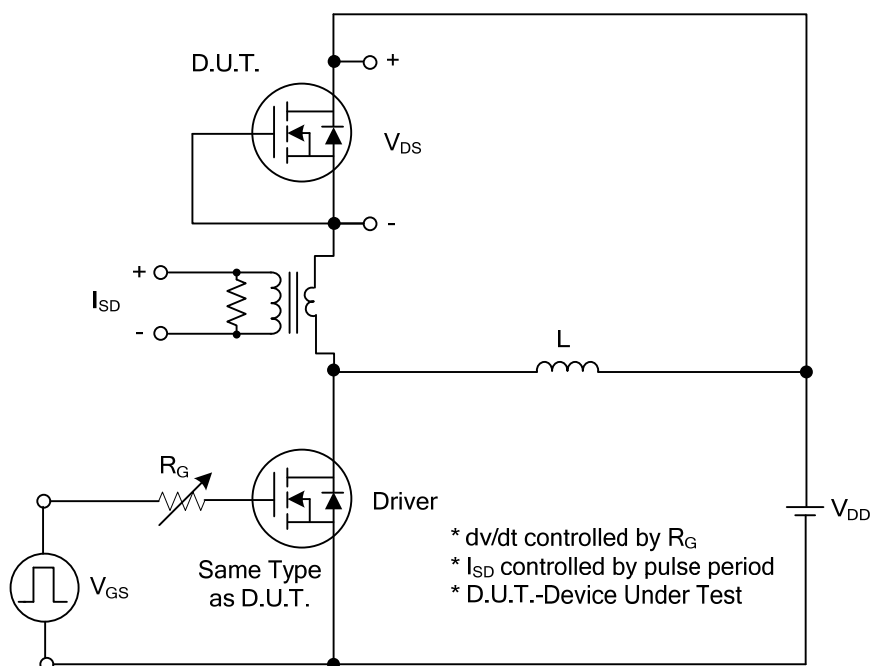
■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{DS} =0V	300			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =300V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+30V, V _{DS} =0V			±100	nA
	Reverse		V _{GS} =-30V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =50mA			7.5	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		70		pF
Output Capacitance		C _{OSS}			15		pF
Reverse Transfer Capacitance		C _{RSS}			3.5		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =240V, V _{GS} =10V, I _D =0.1A (Note1, 2)		9.5		nC
Gate to Source Charge		Q _{GS}			0.7		nC
Gate to Drain Charge		Q _{GD}			0.3		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =100V, V _{GS} =10V, I _D =0.1A, R _G =25Ω (Note1, 2)		2.5		ns
Rise Time		t _R			17		ns
Turn-OFF Delay Time		t _{D(OFF)}			28		ns
Fall-Time		t _F			150		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				0.1	A
Maximum Body-Diode Pulsed Current		I _{SM}				0.2	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =0.1A			1.4	V
Reverse Recovery Time		t _{rr}	V _{GS} =0V, I _S =0.1A,		56		ns
Reverse Recovery Charge		Q _{rr}	dI _F /dt=100A/μs		30		nC

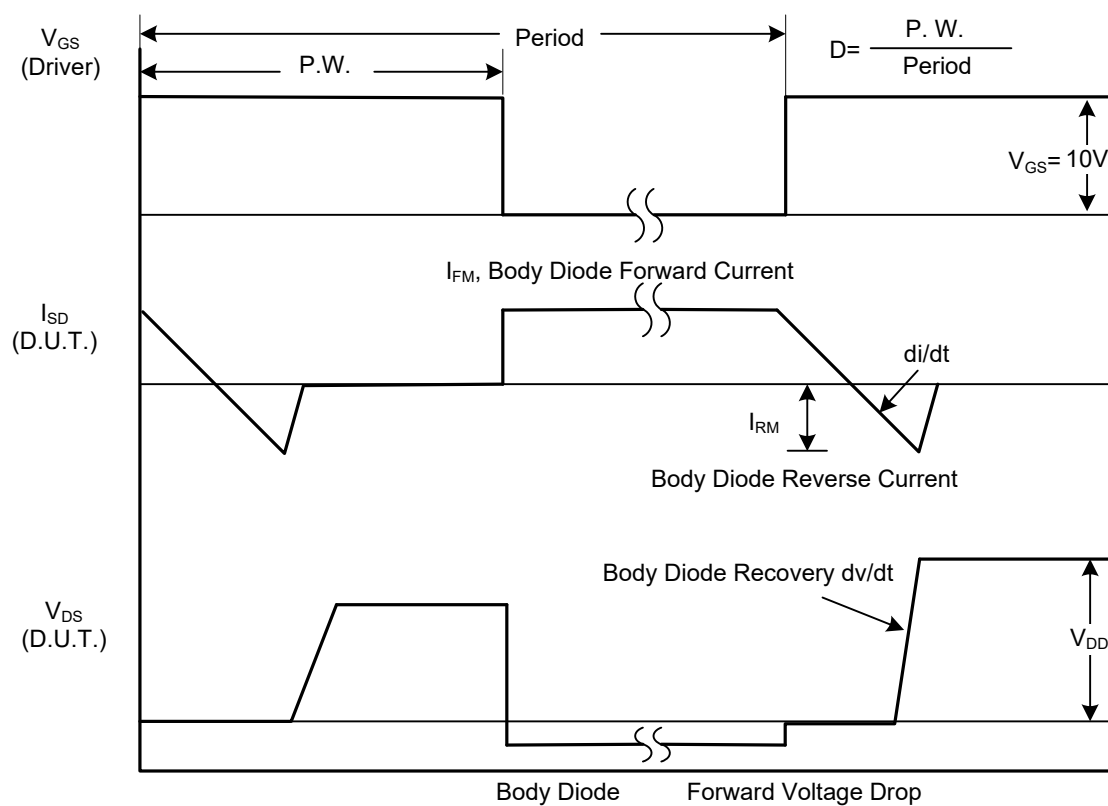
Notes: 1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

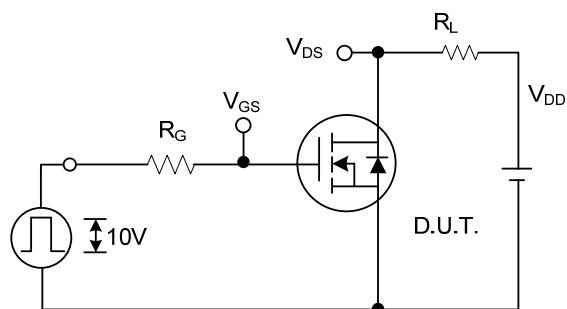


Peak Diode Recovery dv/dt Test Circuit

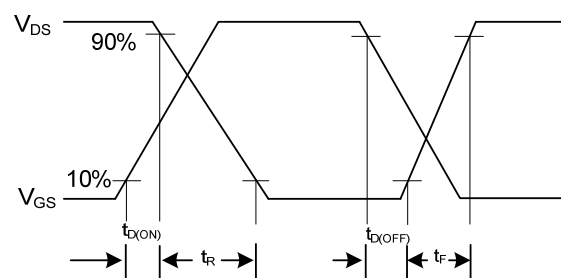


Peak Diode Recovery dv/dt Waveforms

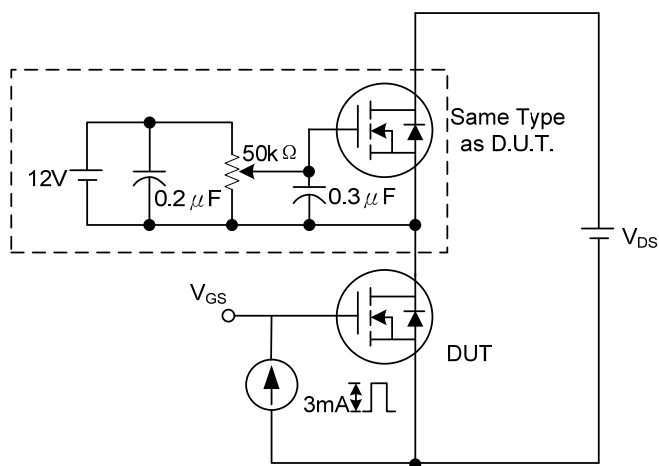
■ TEST CIRCUITS AND WAVEFORMS



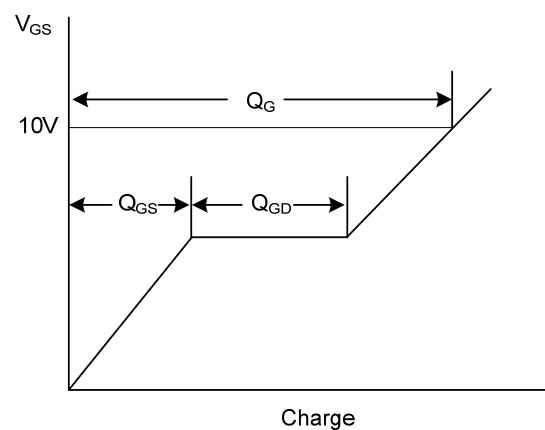
Switching Test Circuit



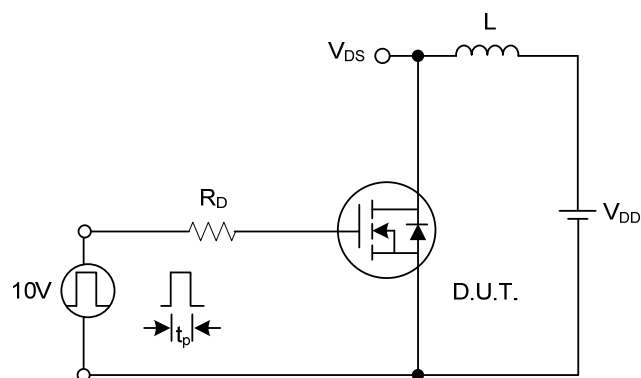
Switching Waveforms



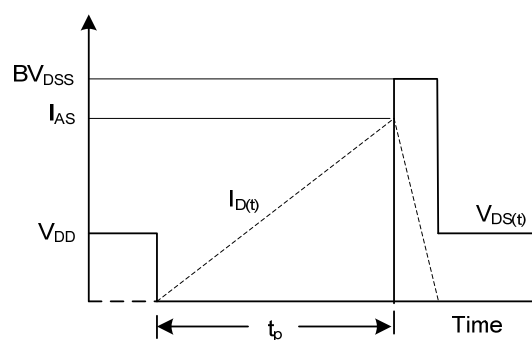
Gate Charge Test Circuit



Gate Charge Waveform

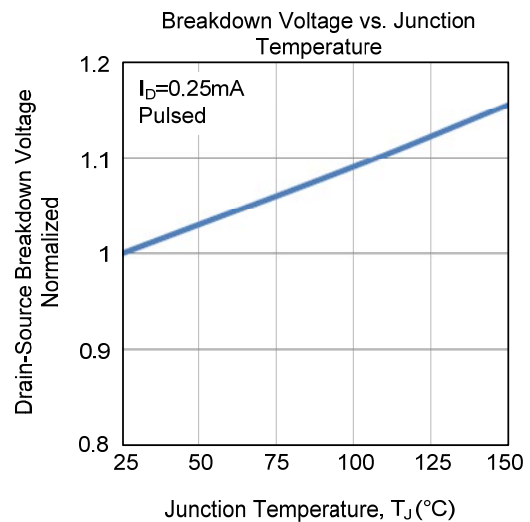
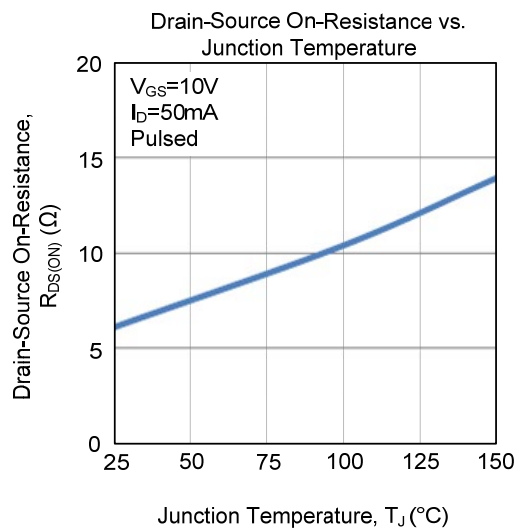
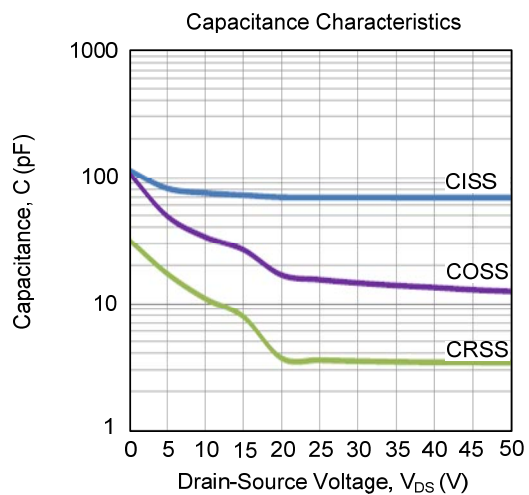
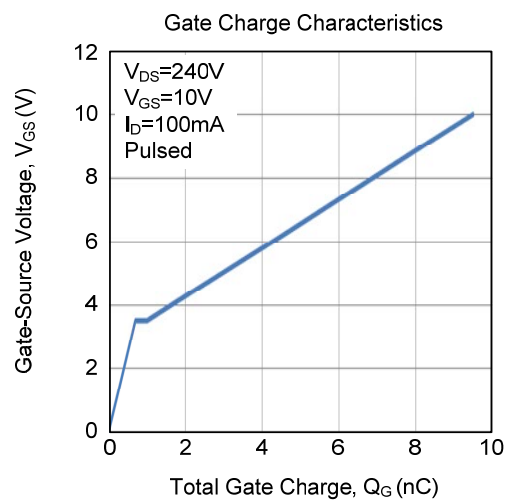
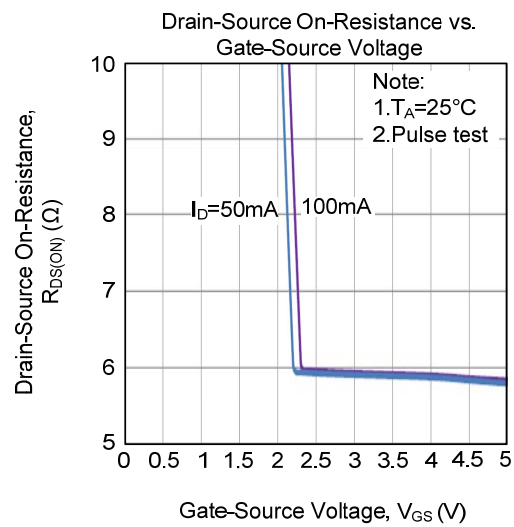
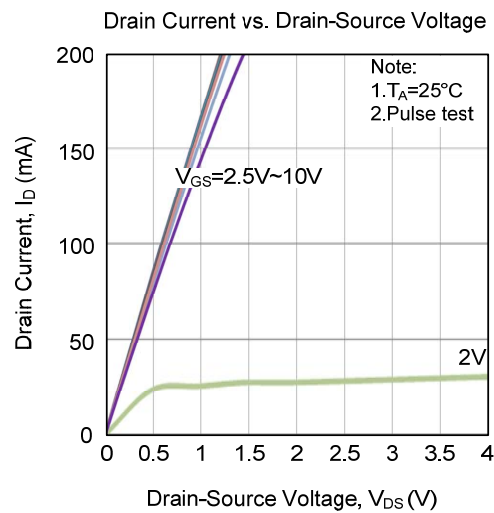


Unclamped Inductive Switching Test Circuit

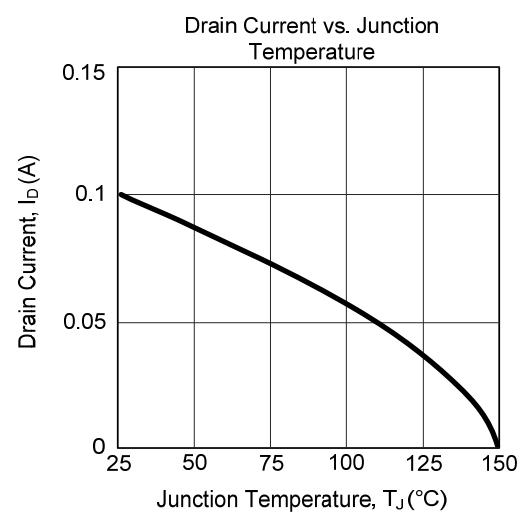
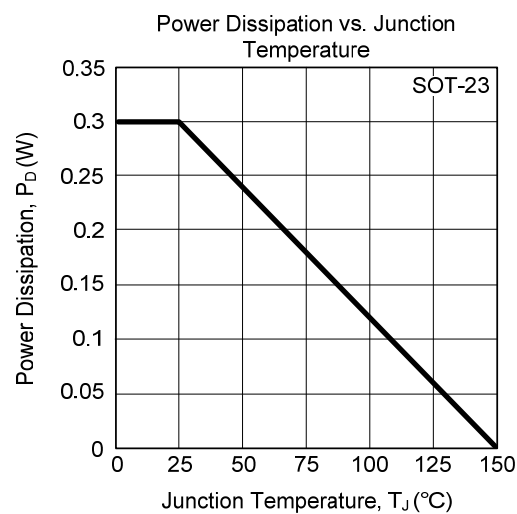
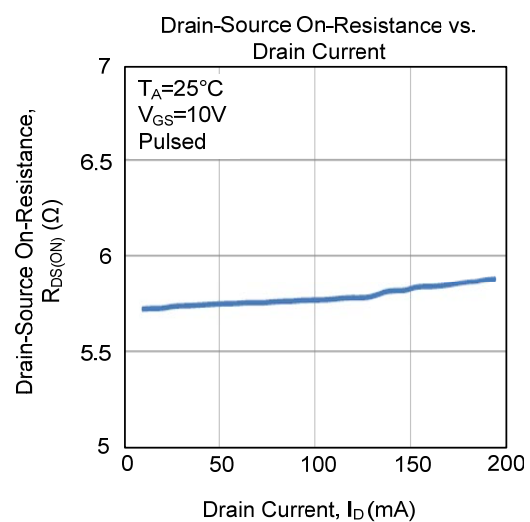
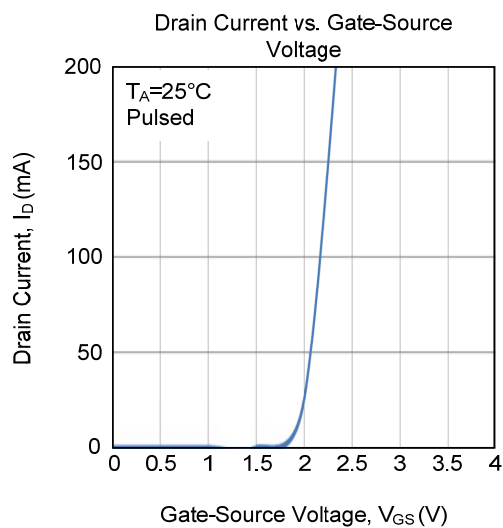
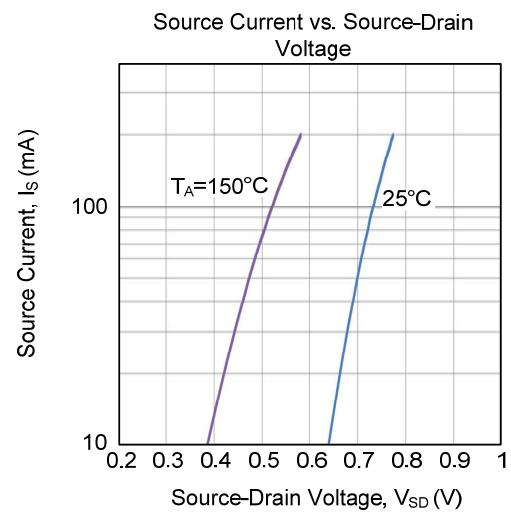
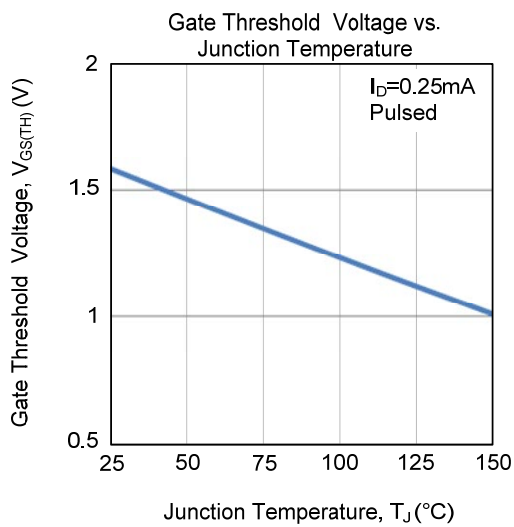


Unclamped Inductive Switching Waveforms

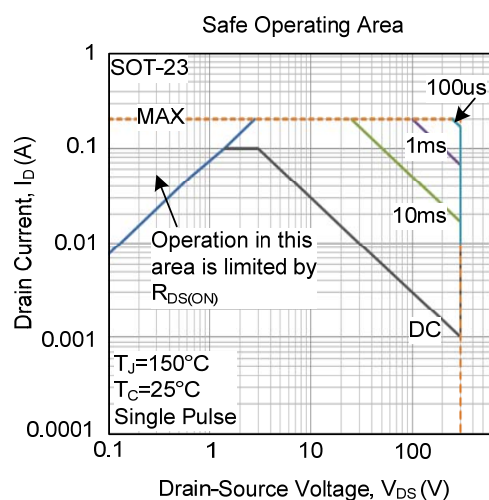
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



TYPICAL CHARACTERISTICS (Cont.)



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