



UTT15N05

Power MOSFET

15A, 50V N-CHANNEL ENHANCEMENT MODE

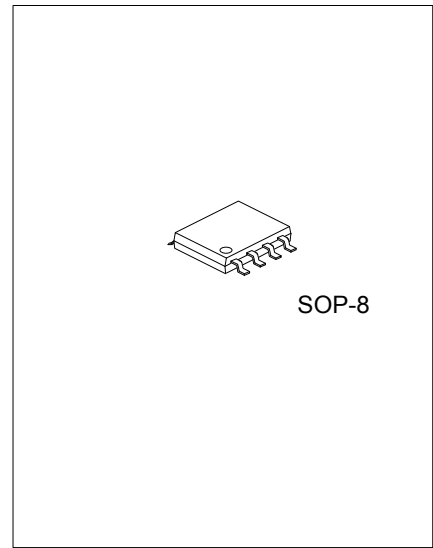
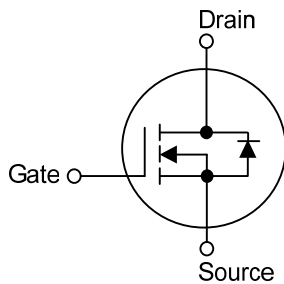
DESCRIPTION

The **UTT15N05** uses UTC's 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

- * $R_{DS(ON)} < 55m\Omega @ V_{GS}=10V, I_D=7.5A$
 $R_{DS(ON)} < 65m\Omega @ V_{GS}=4.5V, I_D=7.5A$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



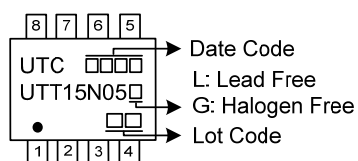
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing		
Lead Free	Halogen Free		1	2	3	4	5	6		7	8
UTT15N05L-S08-R	UTT15N05G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTT15N05G-S08-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) S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	50	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	15	A
Pulsed Drain Current	I _{DM}	30	A
Repetitive avalanche energy (L=0.1mH)	E _{AS}	62	mJ
Power Dissipation (T _C =25°C)	P _D	6	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-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 = 10mH, I_{AS} = 3.53A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction-to-Ambient	θ _{JA}	100	°C/W
Junction to Case	θ _{JC}	20.8 (Note)	°C/W

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

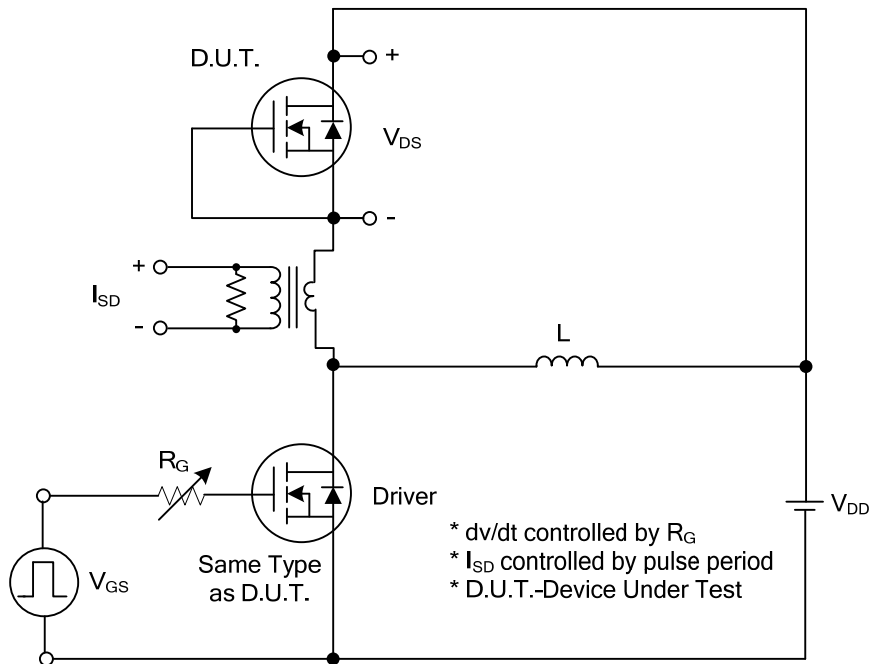
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	50			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =7.5A			55	mΩ
		V _{GS} =4.5V, I _D =7.5A			65	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1MHz		574		pF
Output Capacitance	C _{OSS}			67		pF
Reverse Transfer Capacitance	C _{RSS}			57		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =25V, V _{GS} =10V, I _D =15A I _G =1mA		17		nC
Gate Source Charge	Q _{GS}			3.6		nC
Gate Drain Charge	Q _{GD}			3.1		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =30V, I _D =0.5A, R _G =3Ω		30		ns
Turn-ON Rise Time	t _R			34		ns
Turn-OFF Delay Time	t _{D(OFF)}			216		ns
Turn-OFF Fall-Time	t _F			126		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				15	A
Maximum Body-Diode Pulsed Current	I _{SM}				50	A
Diode Forward Voltage	V _{SD}	I _S =15A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =15A, di/dt=100A/μs		68		ns
Body Diode Reverse Recovery Charge	Q _{rr}				22	

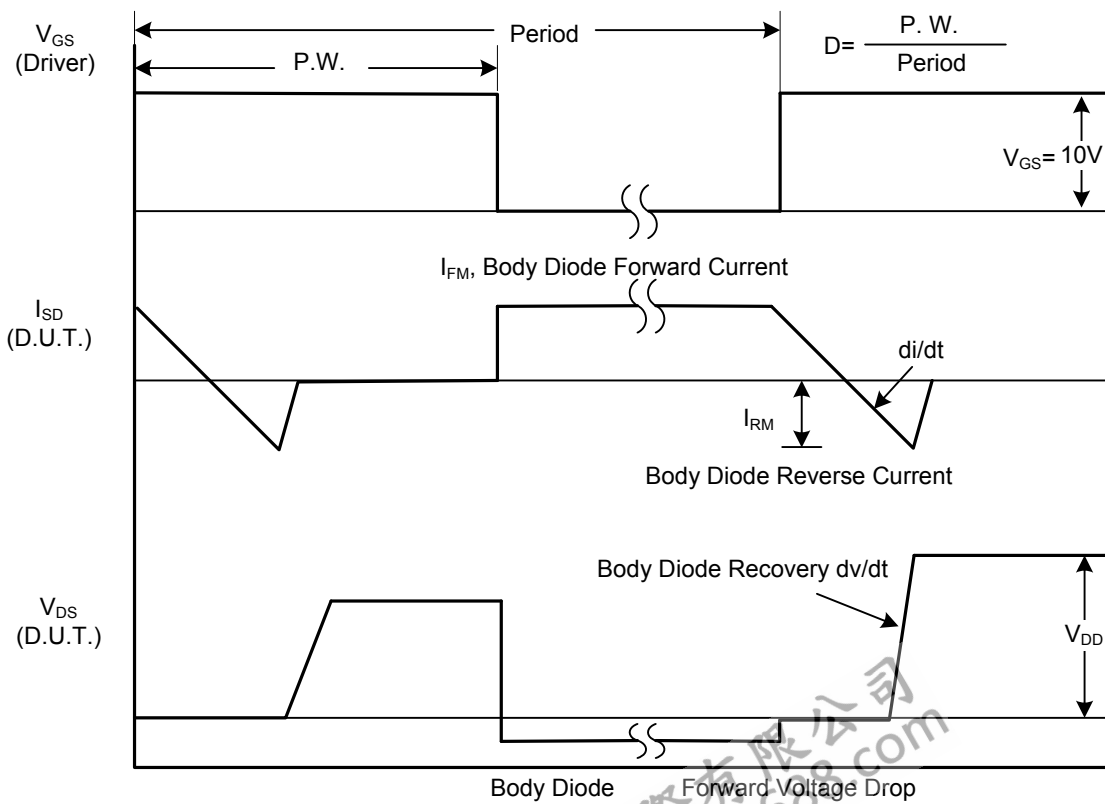
Notes: 1. The data tested by pulsed, pulse width≤500μs, duty cycles≤2%.

2. The power dissipation is limited by 150°C junction temperature.

■ TEST CIRCUITS AND WAVEFORMS

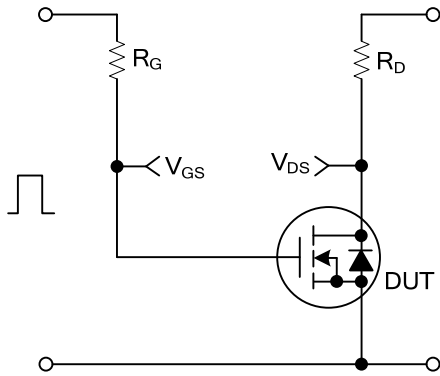


Peak Diode Recovery dv/dt Test Circuit

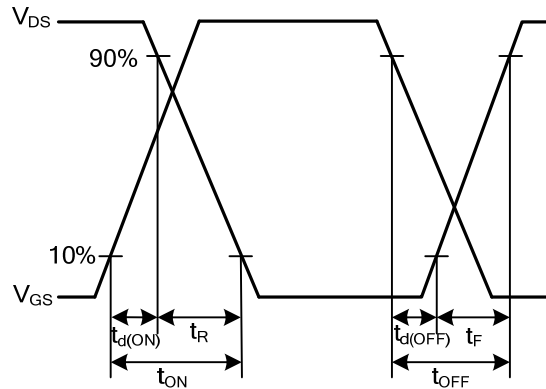


Peak Diode Recovery dv/dt Waveforms

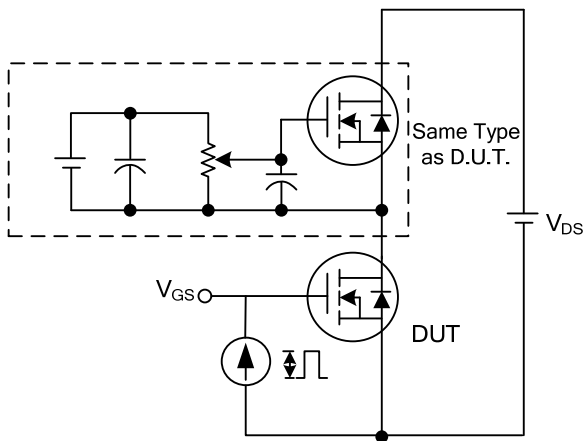
■ TEST CIRCUITS AND WAVEFORMS



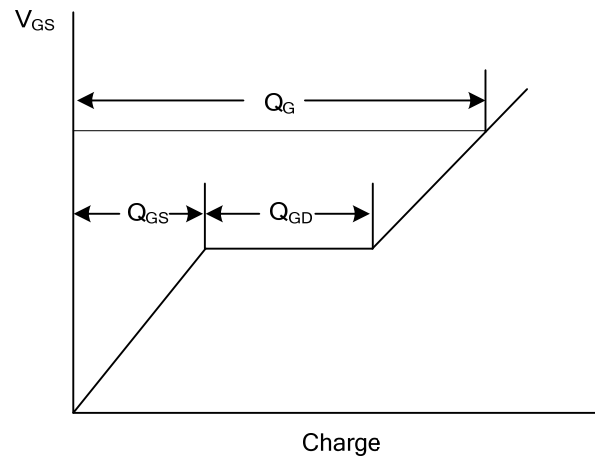
Switching Test Circuit



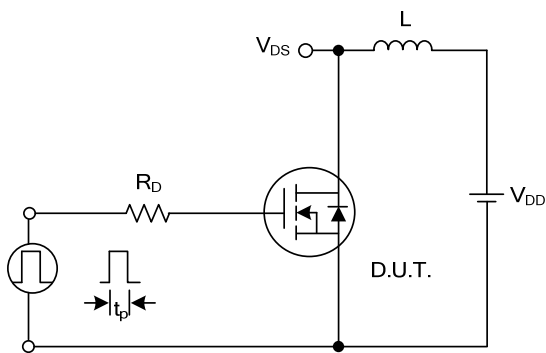
Switching Waveforms



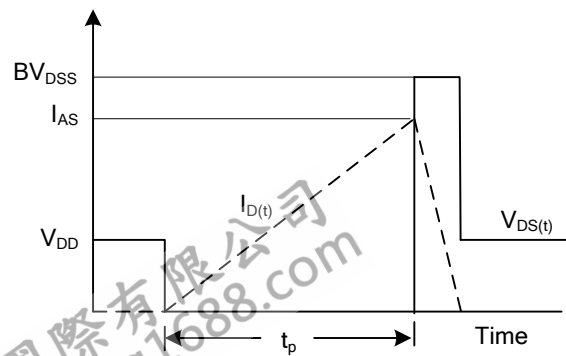
Gate Charge Test Circuit



Gate Charge Waveform

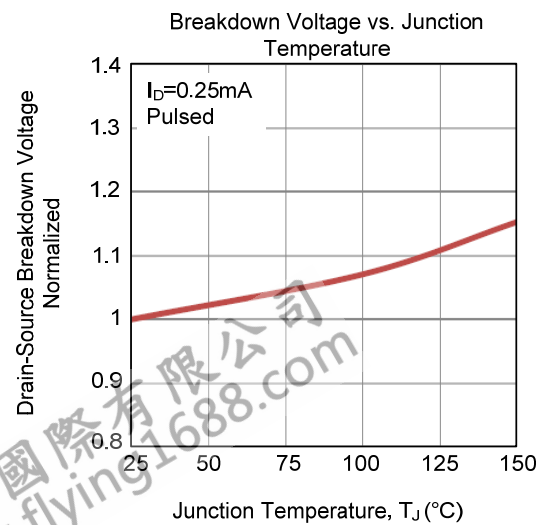
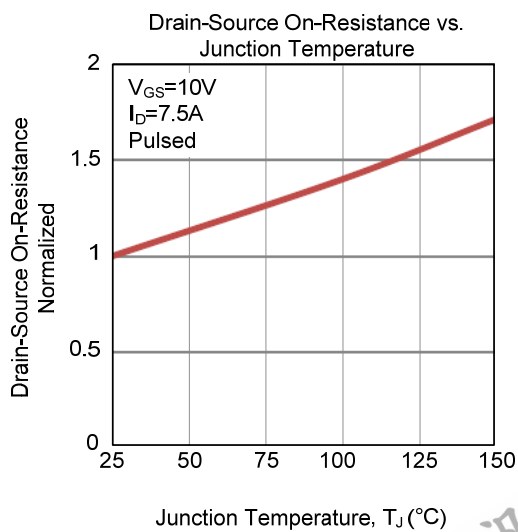
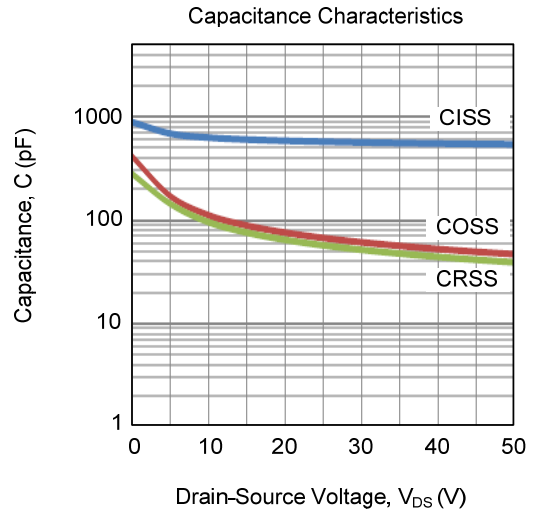
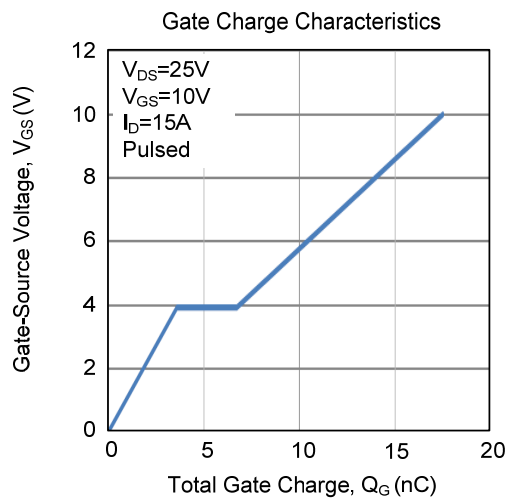
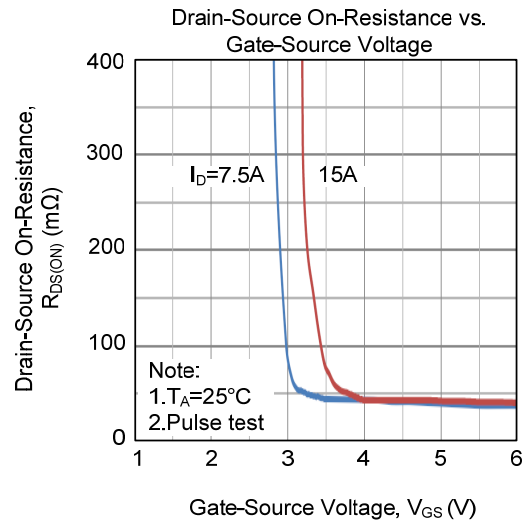
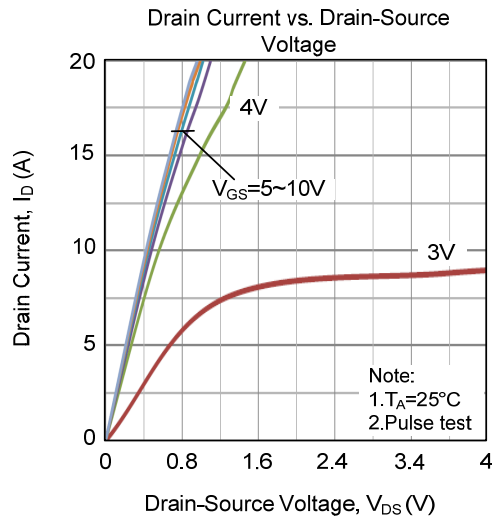


Unclamped Inductive Switching Test Circuit

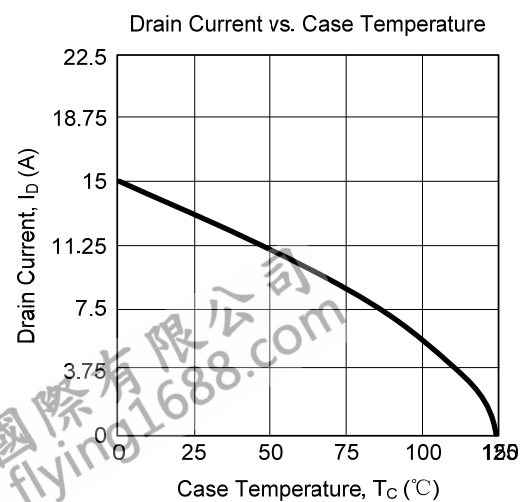
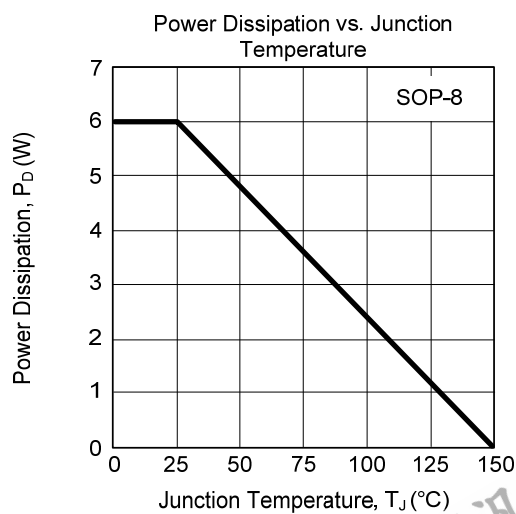
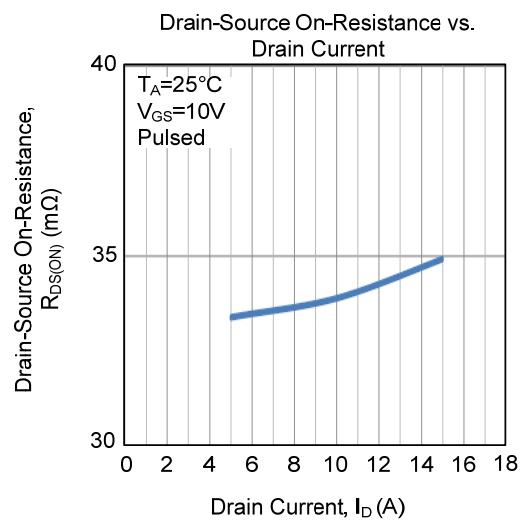
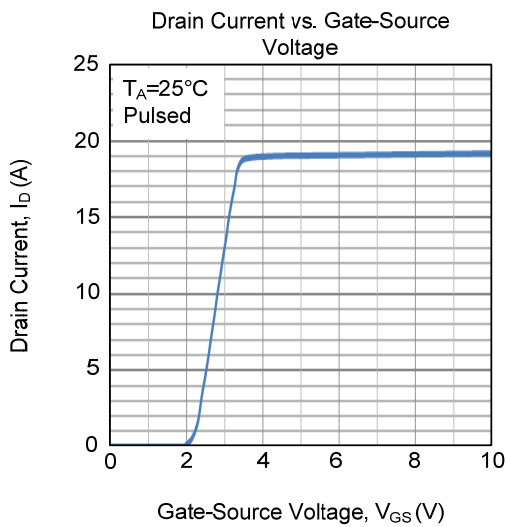
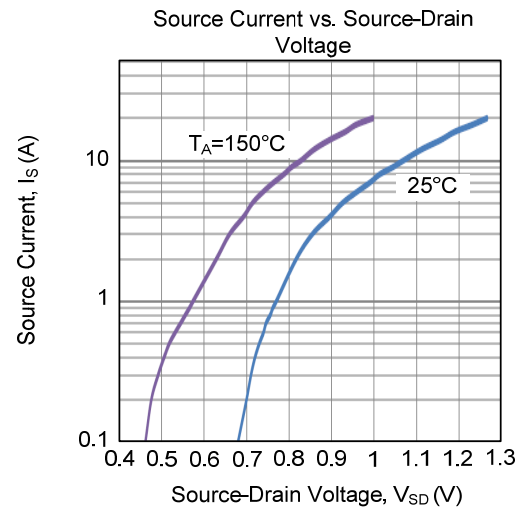
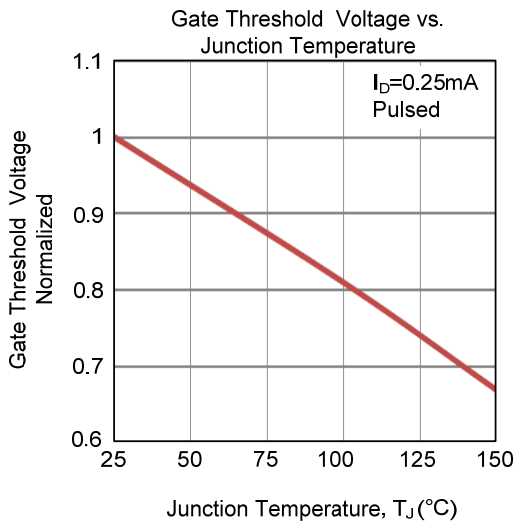


Unclamped Inductive Switching Waveforms

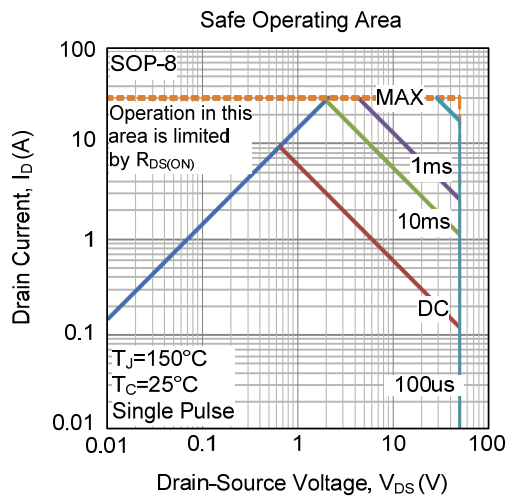
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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