



UT32N06

POWER MOSFET

**32A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UT32N06** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$ and high switching speed.

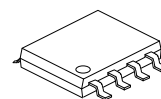
The UTC **UT60N06** is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts, etc.

FEATURES

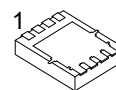
* $R_{DS(ON)} \leq 18 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=16\text{A}$

$R_{DS(ON)} \leq 20 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=16\text{A}$

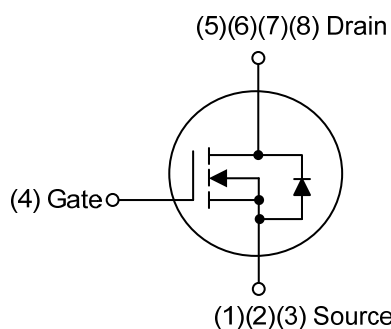
* High Switching Speed



SOP-8



PDFN5x6

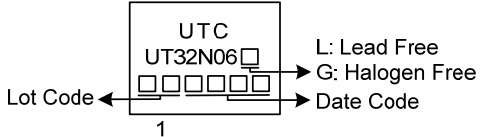
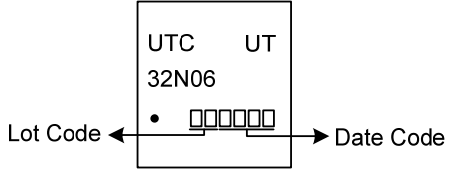
SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT32N06L-S08-R	UT32N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT32N06L-P5060-R	UT32N06G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

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

UT32N06G-S08-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) S08: SOP-8, P5060: PDFN5x6
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING

SOP-8	PDFN5x6
 UTC UT32N06 Lot Code → [] [] [] [] [] → Date Code 1 L: Lead Free G: Halogen Free	 UTC UT 32N06 Lot Code → [] [] [] [] [] → Date Code

■ ABSOLUTE MAXIMUM RATING (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	60	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	32	A
	Pulsed (Note 2)	I _{DM}	64	A
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	40	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	2.15	V/ns
Power Dissipation	SOP-8	P _D	1.6	W
	PDFN5×6		51	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		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 = 0.1mH, I_{AS} = 28.3A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C.

4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ V_{(BR)DSS}, T_J = 25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ _{JA}	125	°C/W
	PDFN5×6		35	°C/W
Junction to Case	SOP-8	θ _{JC}	78	°C/W
	PDFN5×6		2.45	°C/W

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

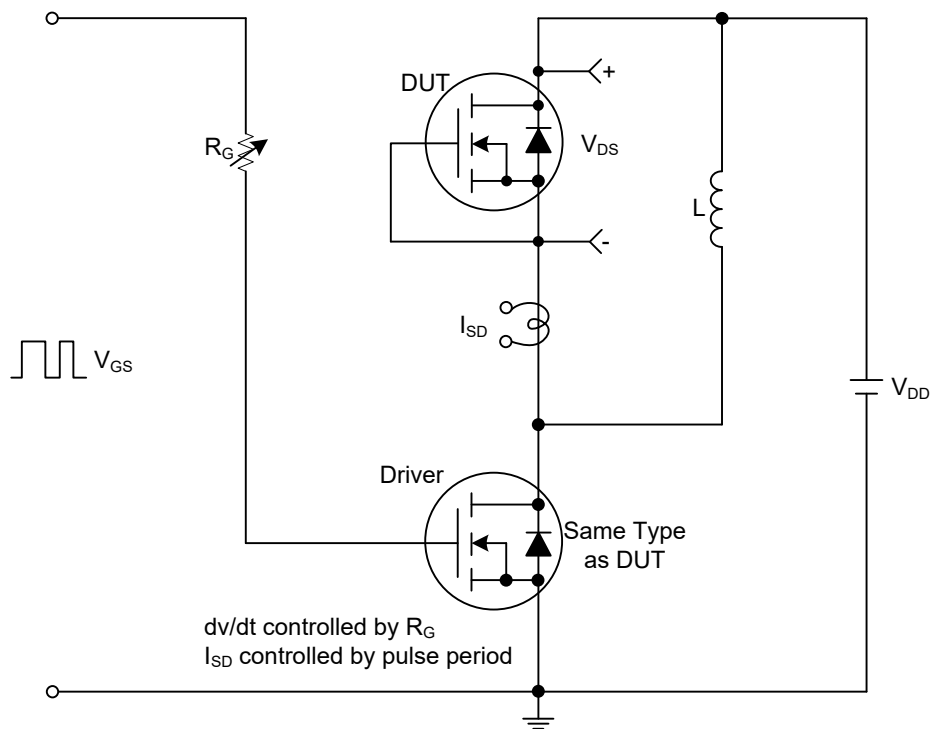
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-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-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =16A			18	mΩ
			V _{GS} =4.5V, I _D =16A			22	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1909		pF
Output Capacitance		C _{OSS}			140		pF
Reverse Transfer Capacitance		C _{RSS}			117		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =48V, V _{GS} =10V, I _D =32A, (Note 1, 2)		51		nC
Gate to Source Charge		Q _{GS}			5		nC
Gate to Drain Charge		Q _{GD}			16		nC
Turn-on Delay Time (Note 1)		t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =32A, R _G =3Ω (Note 1, 2)		7		ns
Rise Time		t _R			18		ns
Turn-off Delay Time		t _{D(OFF)}			38		ns
Fall-Time		t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				32	A
Maximum Body-Diode Pulsed Current		I _{SM}				64	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =30A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =30A, V _{GS} =0V,		44		ns
Body Diode Reverse Recovery Charge		Q _{rr}	dl _F /dt=100A/μs		26		nC

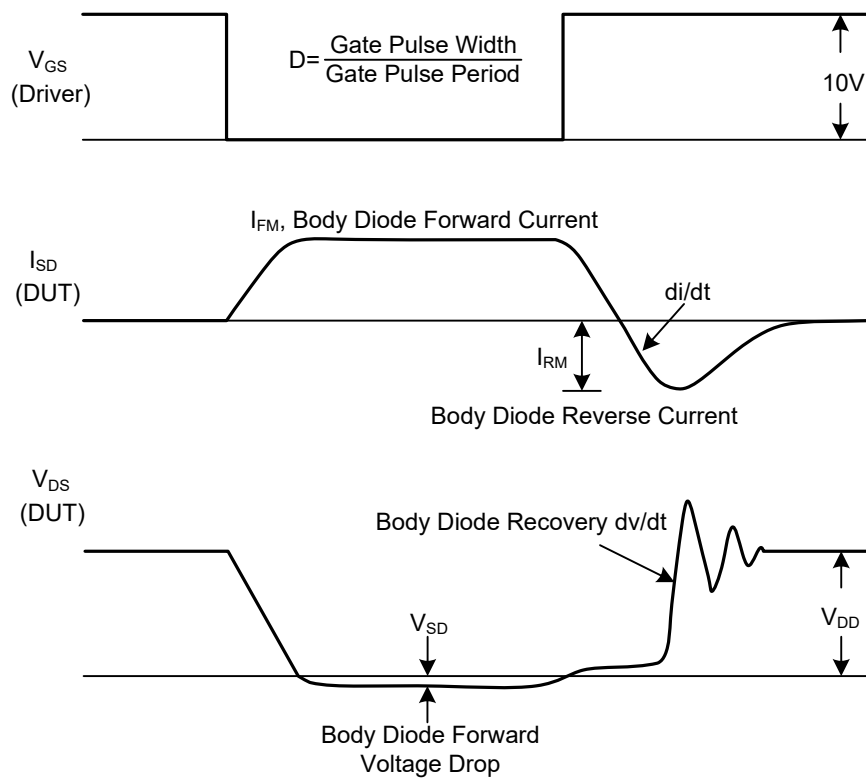
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



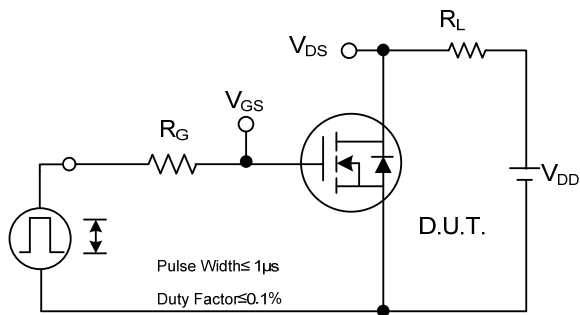
Peak Diode Recovery dv/dt Test Circuit



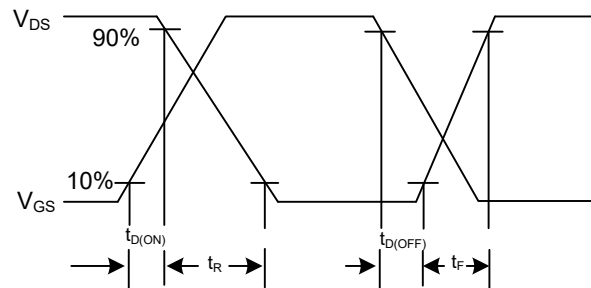
Peak Diode Recovery dv/dt Test Circuit and Waveforms

Peak Diode Recovery dv/dt Waveforms

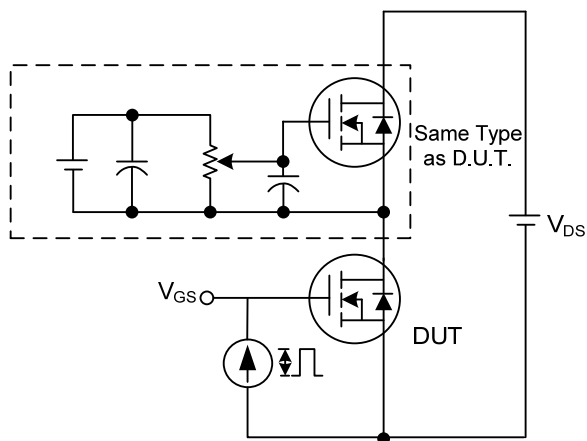
TEST CIRCUITS AND WAVEFORMS



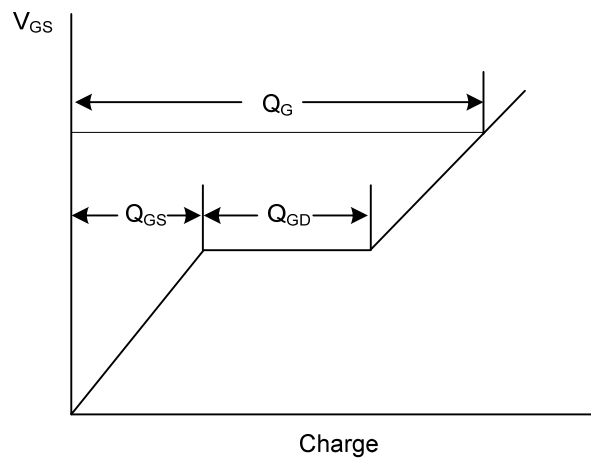
Switching Test Circuit



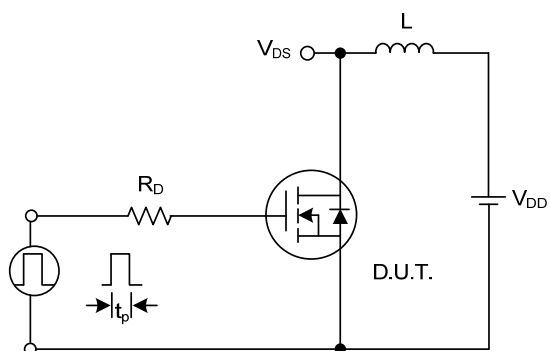
Switching Waveforms



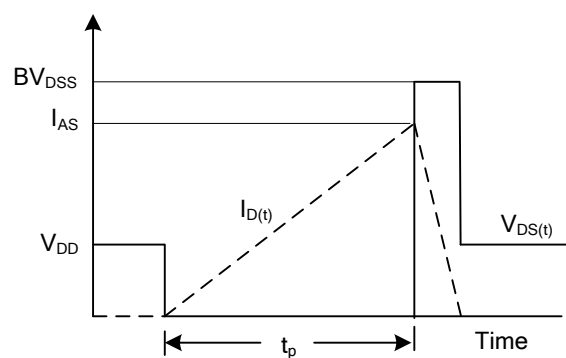
Gate Charge Test Circuit



Gate Charge Waveform

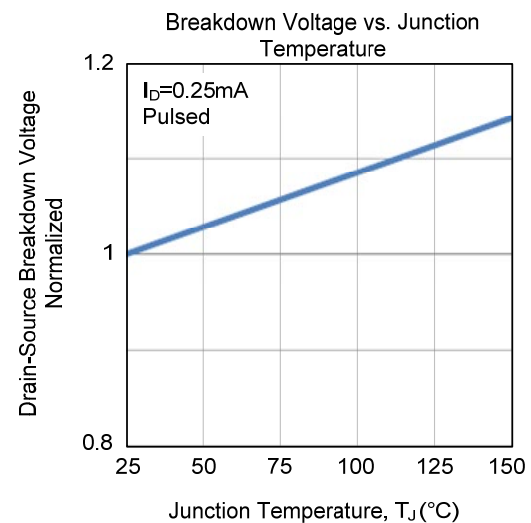
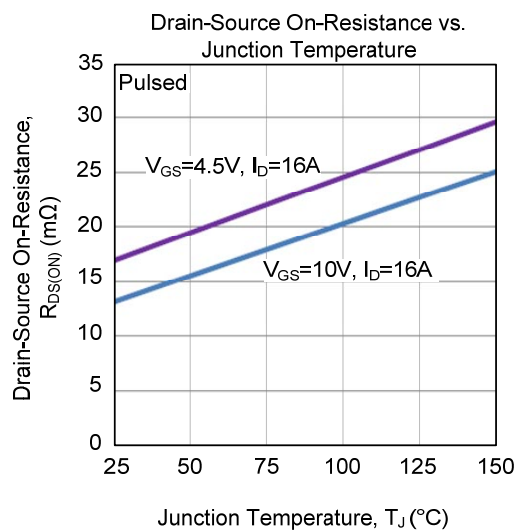
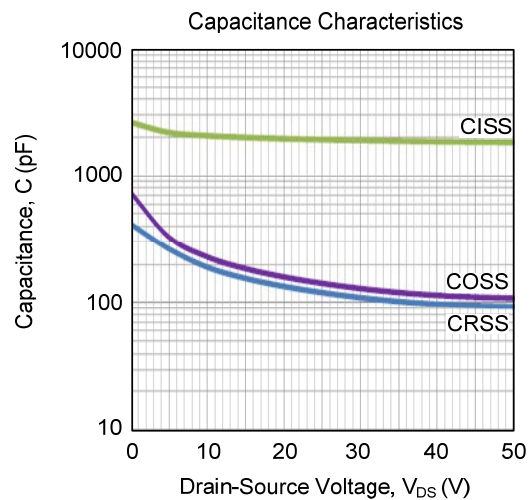
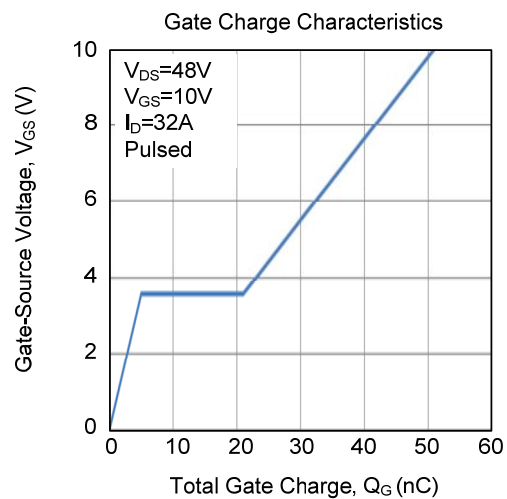
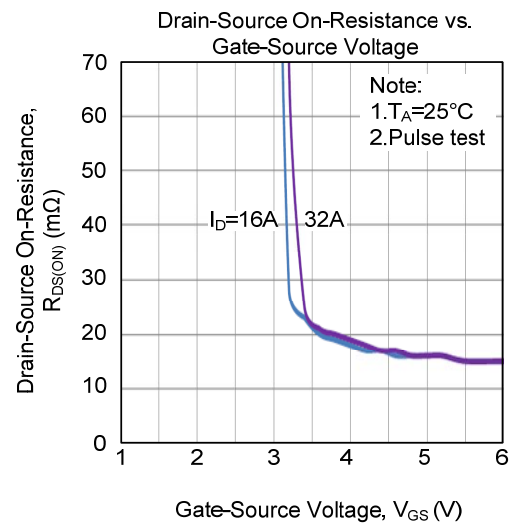
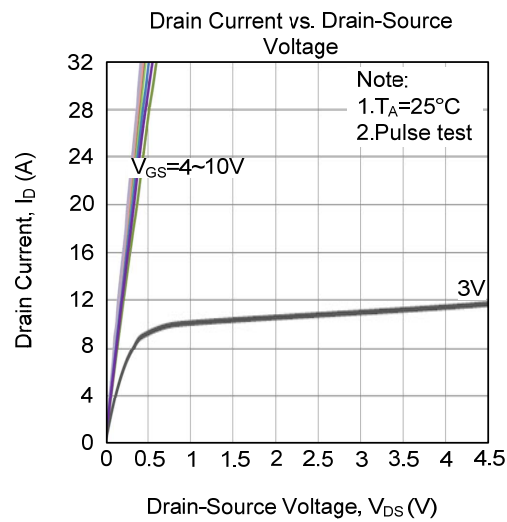


Unclamped Inductive Switching Test Circuit

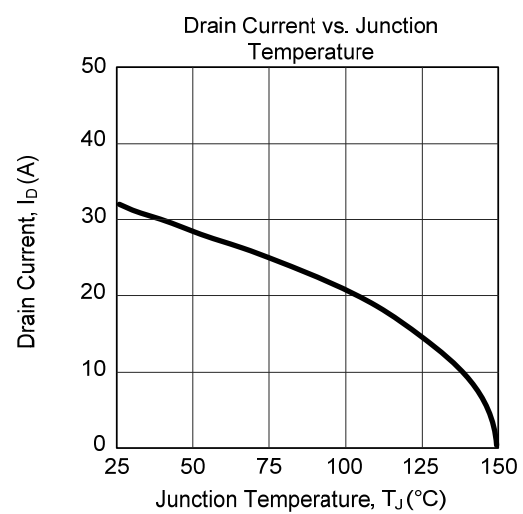
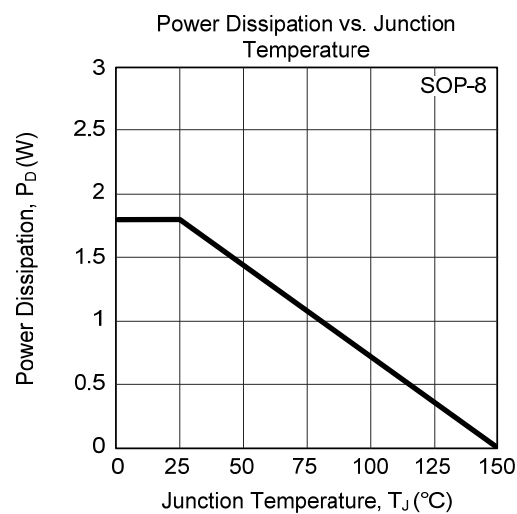
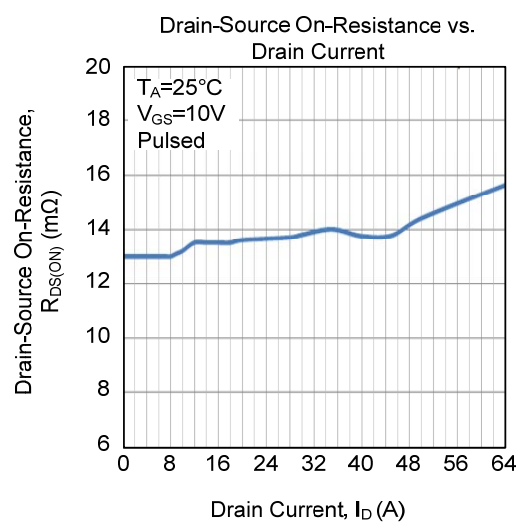
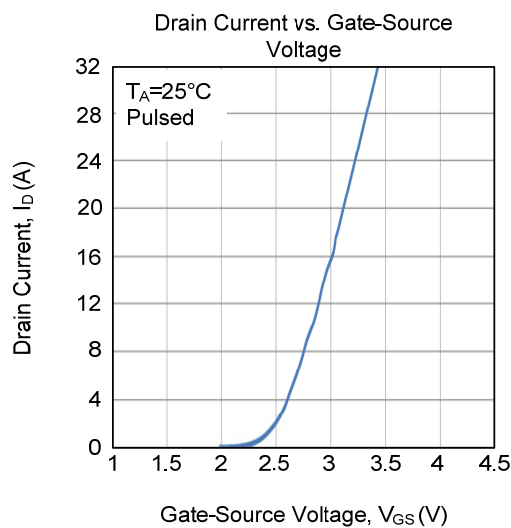
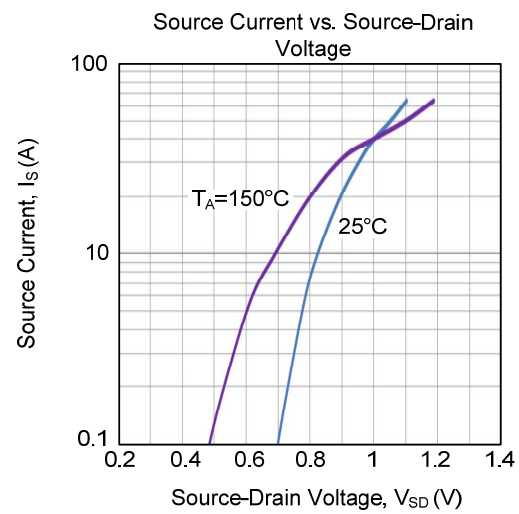
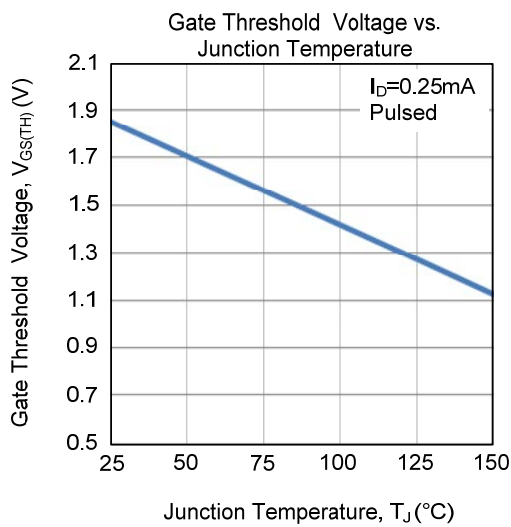


Unclamped Inductive Switching Waveforms

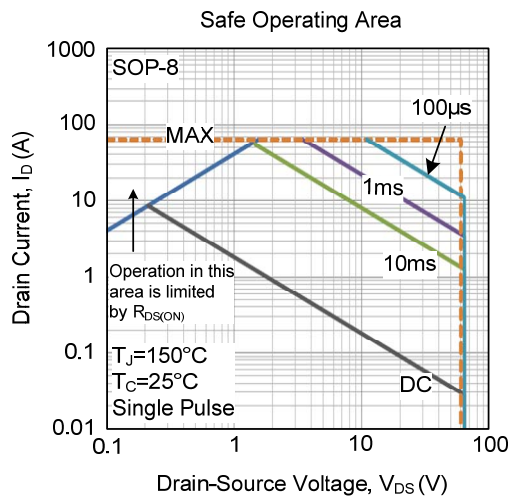
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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