



UTT15N06

Power MOSFET

15A, 60V N-CHANNEL MOSFET

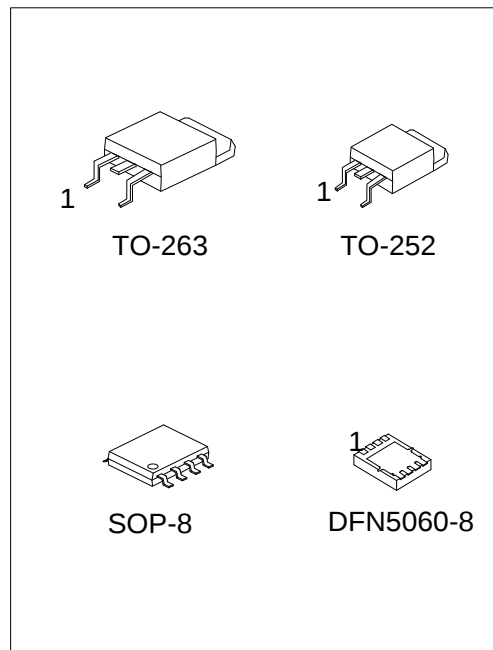
DESCRIPTION

The UTC **UTT15N06** is a N-channel MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed, low gate charge and a minimum on-state resistance.

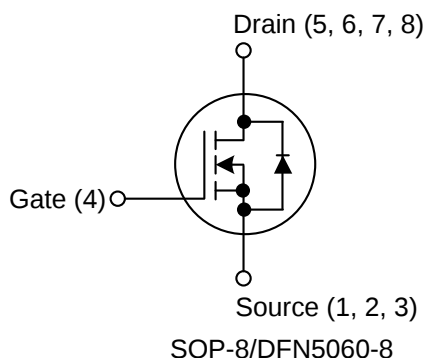
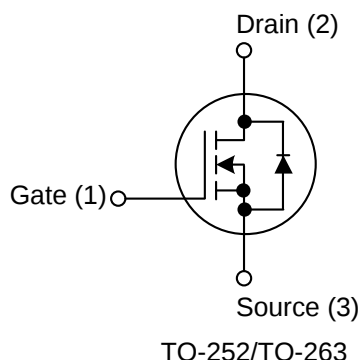
The UTC **UTT15N06** is suitable for synchronous rectifier and load switch.

FEATURES

- * $R_{DS(ON)} \leq 28 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=15\text{A}$
- * $R_{DS(ON)} \leq 40 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=15\text{A}$
- * High switching speed
- * Low gate charge



SYMBOL



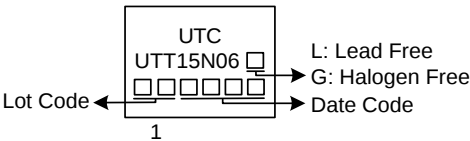
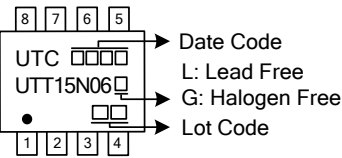
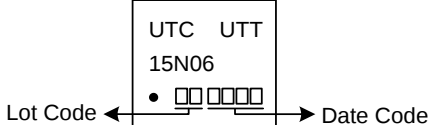
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT15N06L-TN3-R	UTT15N06G-TN3-R	TO-252	G	D	S						Tape Reel
UTT15N06L-TQ2-T	UTT15N06G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT15N06L-TQ2-R	UTT15N06G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT15N06L-S08-R	UTT15N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT15N06L-K08-5060-R	UTT15N06G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTT15N06G-TN3-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel, T: Tube (2) TN3: TO-252, TQ2: TO-263, S08: SOP-8, K08-5060: DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

Package	Marking
TO-252 TO-263	 UTC UTT15N06 1 Lot Code ← → Date Code L: Lead Free G: Halogen Free
SOP-8	 UTC UTT15N06 1 Date Code L: Lead Free G: Halogen Free Lot Code
DFN5060-8	 UTC UTT 15N06 1 Lot Code ← → Date Code

■ ABSOLUTE MAXIMUM RATINGS (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	15	A
	Pulsed	I _{DM}	60	A
Avalanche Energy		E _{AS}	23.8	mJ
Power Dissipation	TO-252	P _D	42	W
	TO-263		80	W
	SOP-8		2	W
	DFN5060-8		15	W
Operating Temperature		T _{OPR}	-55 ~ +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} = 21.8A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note)	TO-252	θ _{JA}	75	°C/W
	TO-263		35	°C/W
	SOP-8		125	°C/W
	DFN5060-8		60	°C/W
Junction to Case	TO-252	θ _{JC}	3	°C/W
	TO-263		1.6	°C/W
	SOP-8		62.5	°C/W
	DFN5060-8		8	°C/W

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

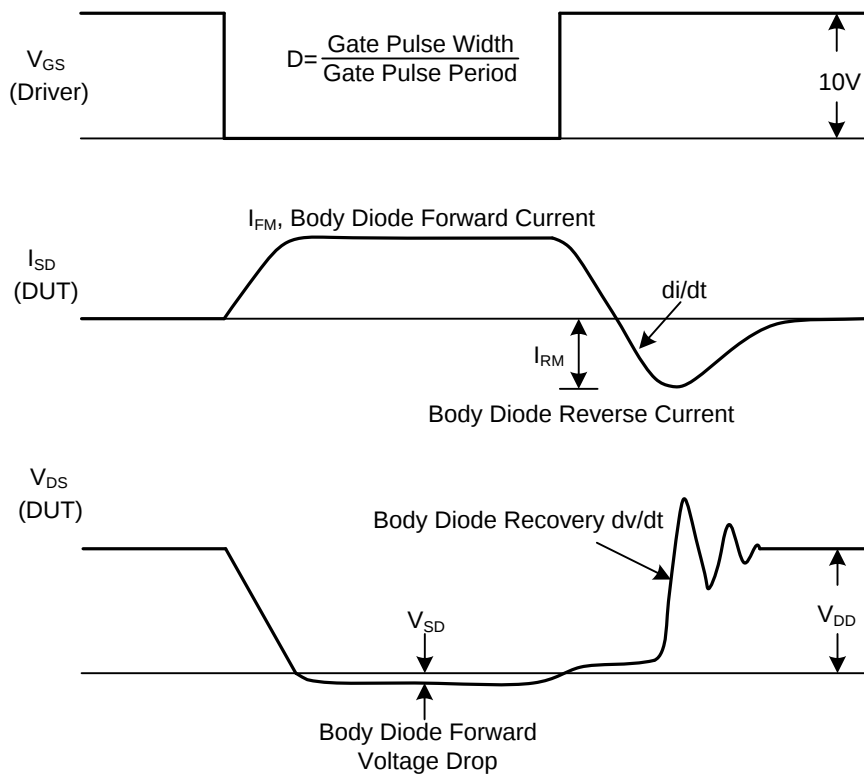
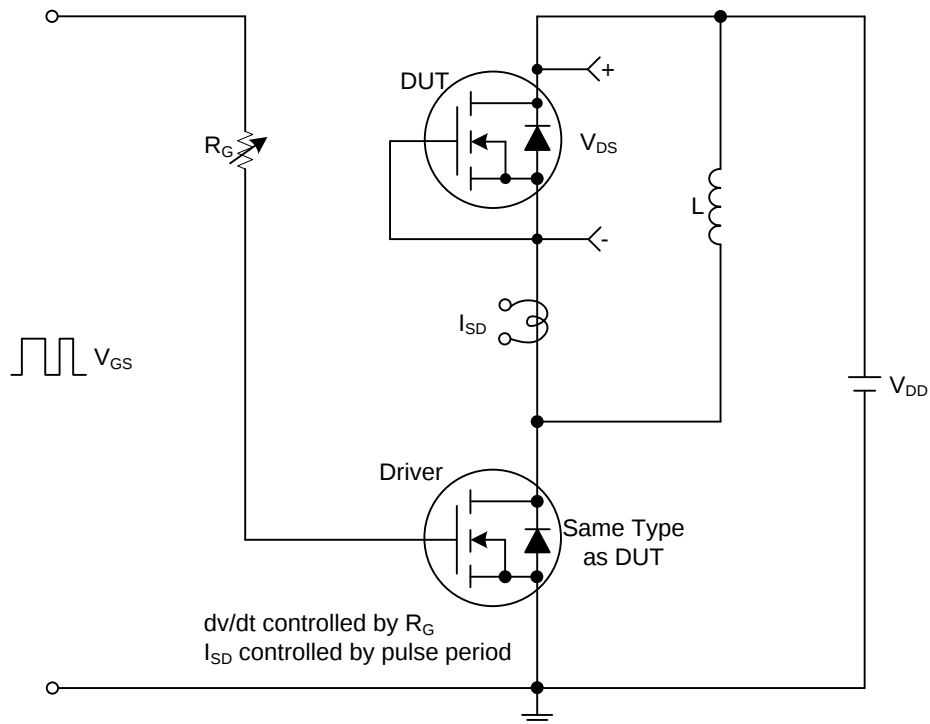
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

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	0.8		2.5	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =15A		23.9	28	mΩ
			V _{GS} =4.5V, I _D =15A		32	40	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		770		pF
Output Capacitance		C _{OSS}			84		pF
Reverse Transfer Capacitance		C _{RSS}			70		pF
Gate Resistance		R _G			1		Ω
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DD} =48V, I _D =15A, V _{GS} =10V		21.6		nC
Gate to Source Charge		Q _{GS}			3.4		nC
Gate to Drain Charge		Q _{GD}			5.4		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =30V, I _D =15A, R _G =3.3Ω V _{DS} =10V		5.9		ns
Rise Time		t _R			16.4		ns
Turn-OFF Delay Time		t _{D(OFF)}			18.2		ns
Fall-Time		t _F			18		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				15	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				60	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =15A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time (Note 1)		t _{rr}	I _S =15A, V _{GS} =0V, dI _F /dt=100A/μs		2.92		nS
Body Diode Reverse Recovery Charge		Q _{rr}			46		μC

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

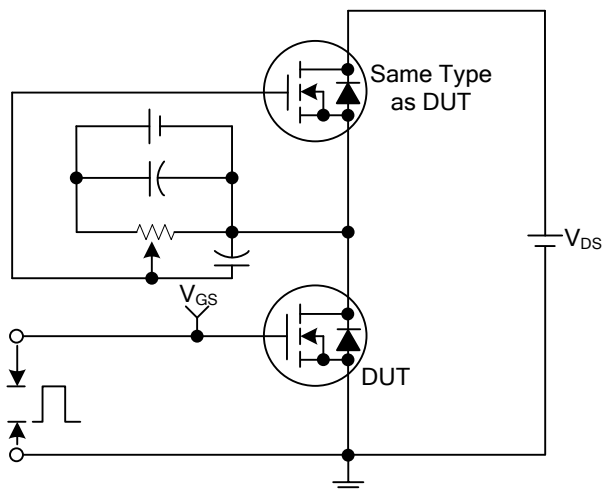
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

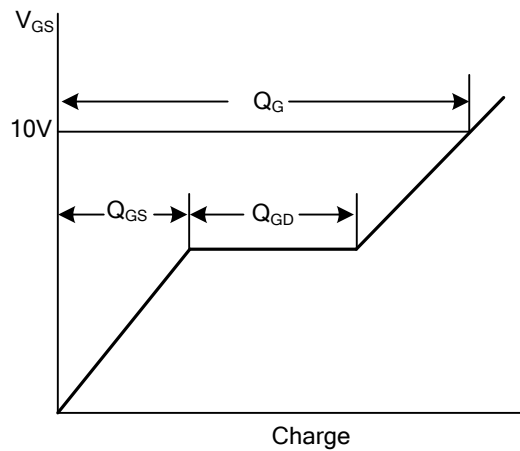


Peak Diode Recovery dv/dt Test Circuit and Waveforms

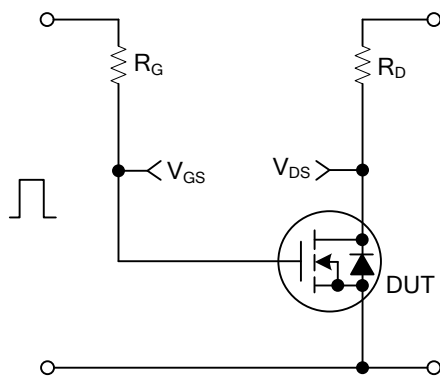
■ TEST CIRCUITS AND WAVEFORMS



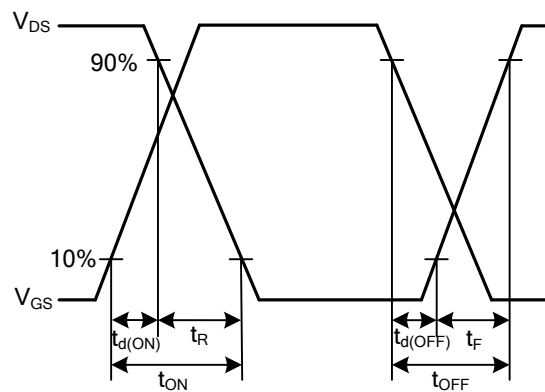
Gate Charge Test Circuit



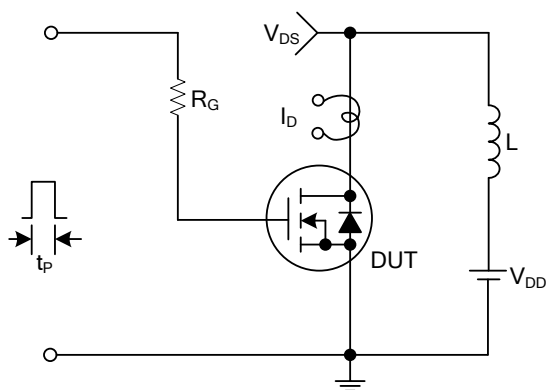
Gate Charge Waveforms



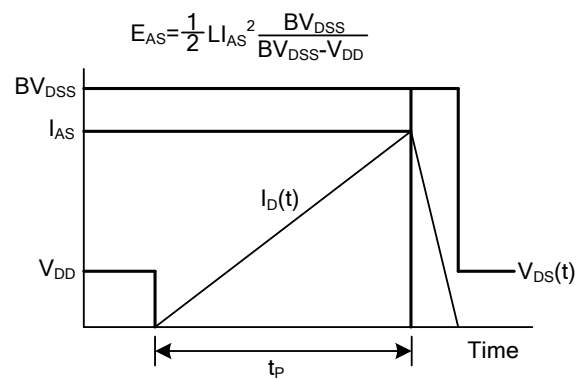
Resistive Switching Test Circuit



Resistive Switching Waveforms

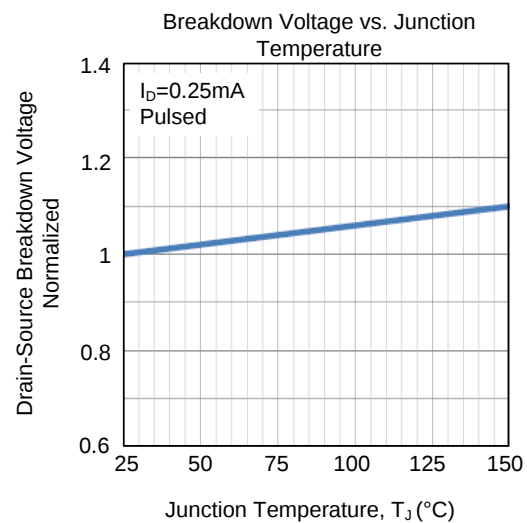
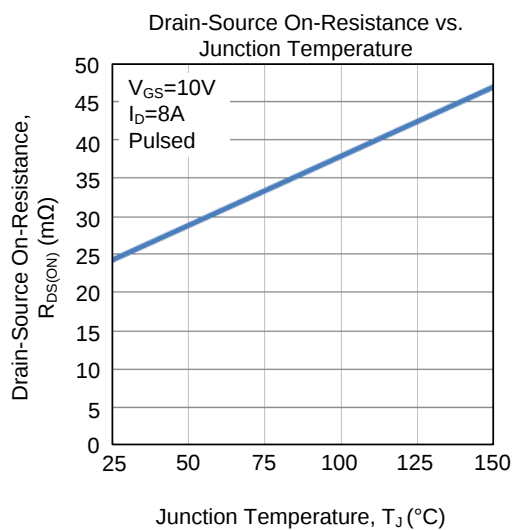
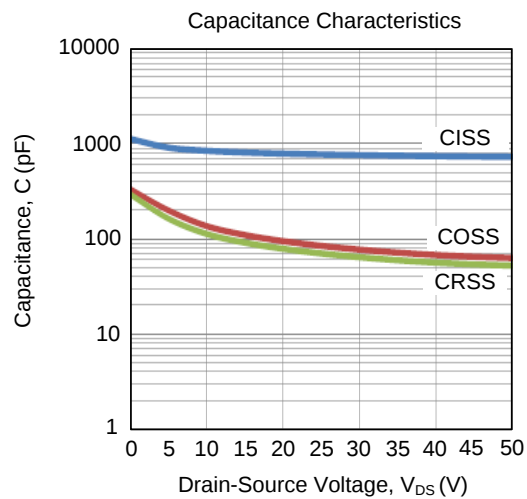
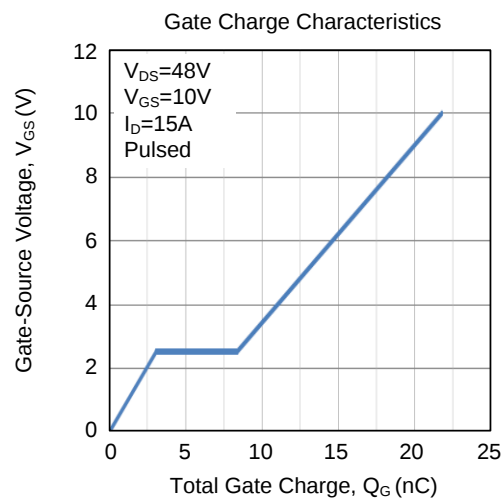
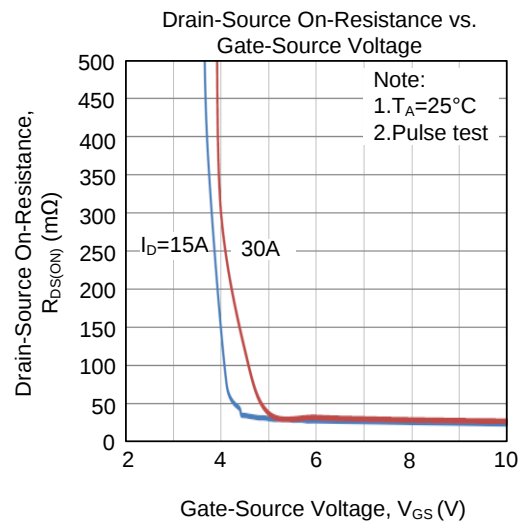
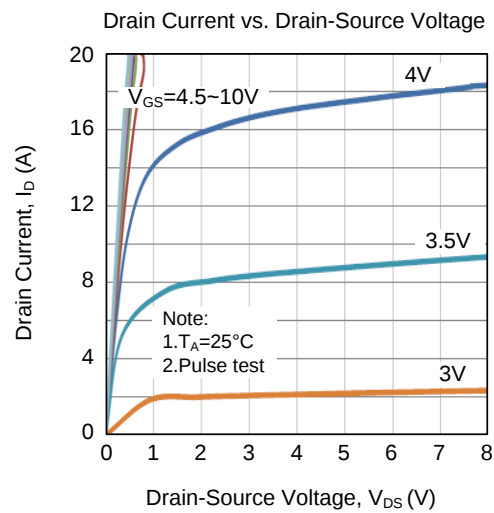


Unclamped Inductive Switching Test Circuit

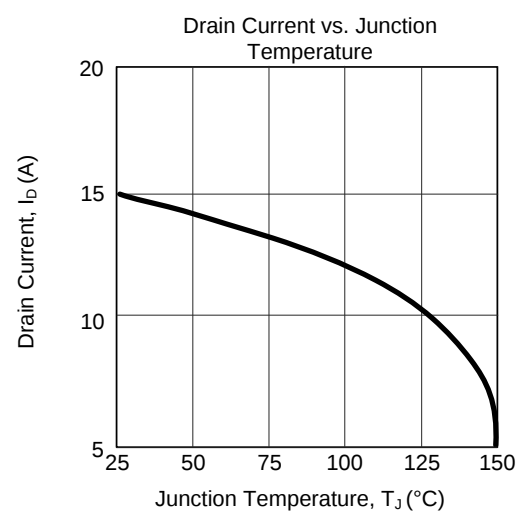
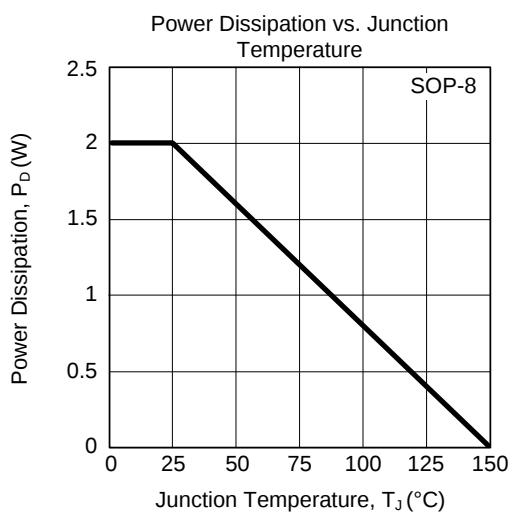
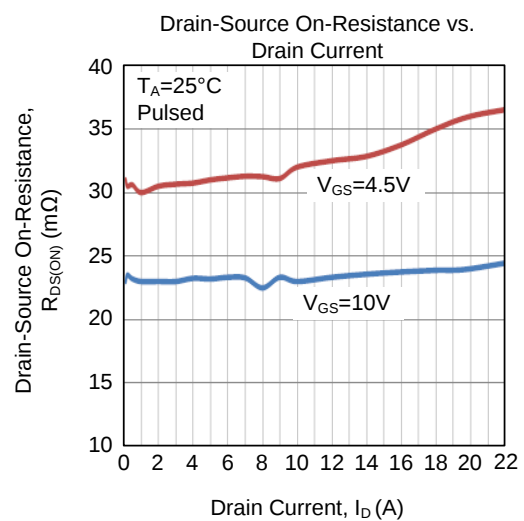
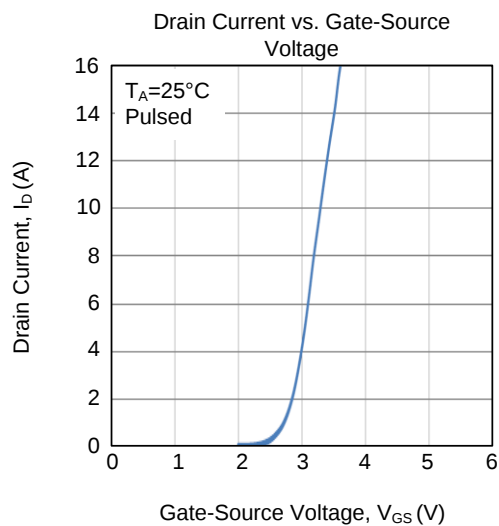
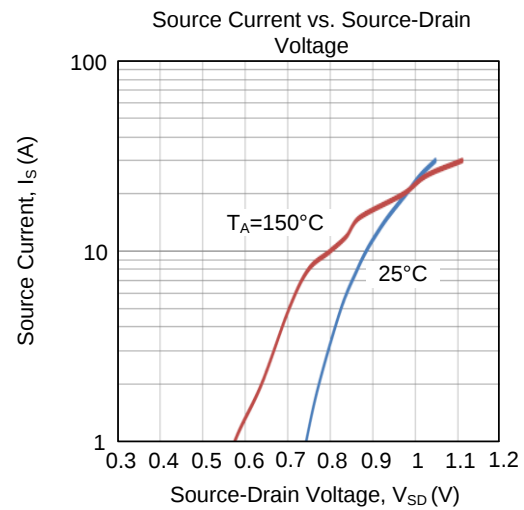
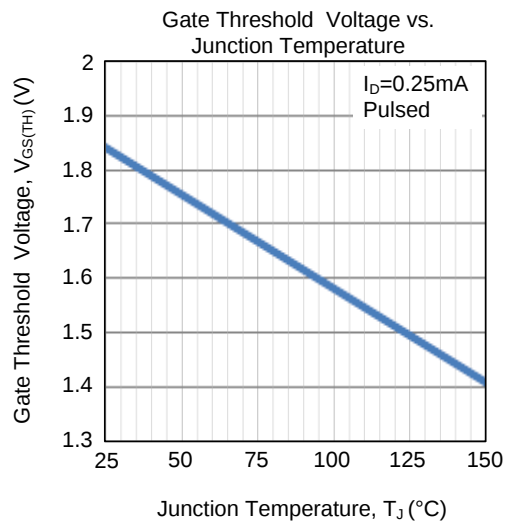


Unclamped Inductive Switching Waveforms

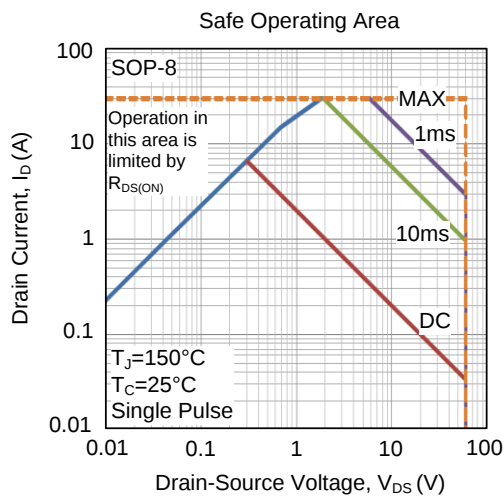
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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