



UTT80N10H

Power MOSFET

80A, 100V N-CHANNEL POWER MOSFET

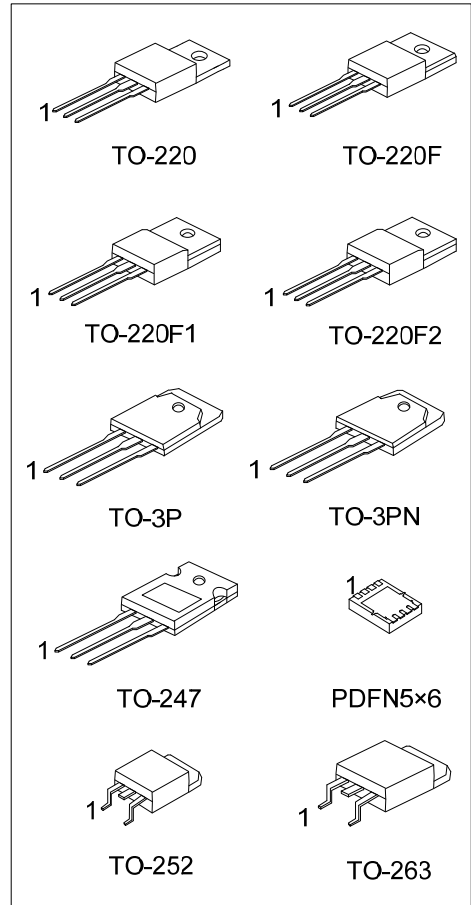
DESCRIPTION

The UTC **UTT80N10H** is a N-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and low gate charge, etc.

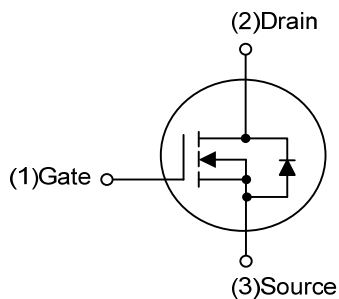
The UTC **UTT80N10H** applies to primary side switch, synchronous rectifier, Motor Drives, etc.

FEATURES

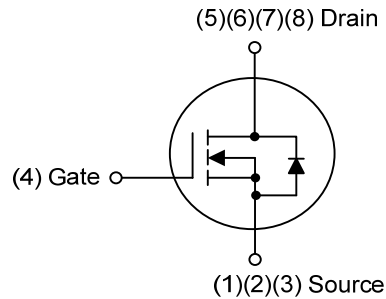
- * $R_{DS(ON)} \leq 14 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=40\text{A}$
- * High Cell Density Trench Technology
- * High Power and Current Handling Capability



SYMBOL



TO-220/TO-220F/TO-220F1/TO-220F2
TO-3P/TO-3PN/TO-247/TO-252/TO-263



PDFN5x6

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT80N10HL-TA3-T	UTT80N10HG-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF1-T	UTT80N10HG-TF1-T	TO-220F1	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF2-T	UTT80N10HG-TF2-T	TO-220F2	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TF3-T	UTT80N10HG-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-T47-T	UTT80N10HG-T47-T	TO-247	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TN3-R	UTT80N10HG-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT80N10HL-TQ2-T	UTT80N10HG-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-TQ2-R	UTT80N10HG-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT80N10HL-T3P-T	UTT80N10HG-T3P-T	TO-3P	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-T3N-T	UTT80N10HG-T3N-T	TO-3PN	G	D	S	-	-	-	-	-	Tube
UTT80N10HL-P5060-R	UTT80N10HG-P5060-R	PDFN5×6	S	S	S	G	D	D	D	D	Tape Reel

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

UTT80N10HG-TA3-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2, TF3: TO-220F, T47: TO-247, TN3: TO-252, TQ2: TO-263, T3P: TO-3P, T3N: TO-3PN, P5060: PDFN5×6 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

TO-220 / TO-220F / TO-220F1 / TO-220F2 TO-3P / TO-3PN / TO-247 / TO-252 / TO-263	PDFN5×6
UTC UTT 80N10H □ Lot Code ← □ □ □ □ □ □ → Date Code 1 L: Lead Free G: Halogen Free	UTC UTT 80N10H Lot Code ← • □ □ □ □ □ □ → Date Code

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	100	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	80	A
	Pulsed (Note 2)	I _{DM}	160	A
Avalanche Current (Note 2)		I _{AR}	20	A
Single Pulsed Avalanche Energy (Note 3)		E _{AS}	200	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.6	V/ns
Power Dissipation	TO-220/TO-263	P _D	142	W
	TO-220F		39	W
	TO-220F1			
	TO-220F2		41	W
	TO-3P/TO-3PN		320	W
	TO-247		312	W
	TO-252		55	W
	PDFN5×6		39	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. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

3. L = 0.5mH, 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} ≤ BV_{DSS}, T_J ≤ T_{JMAX}, T_J = 25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F	θ _{JA}	62.5	°C/W
	TO-220F1			
	TO-220F2			
	TO-263			
	TO-3P/TO-3PN		40	°C/W
	TO-247		50	°C/W
	TO-252		110	°C/W
Junction to Case	PDFN5×6	θ _{JC}	65 (Note)	°C/W
	TO-220/TO-263		0.88	°C/W
	TO-220F		3.2	°C/W
	TO-220F1			
	TO-220F2		3.05	°C/W
	TO-3P/TO-3PN		0.39	°C/W
	TO-247		0.4	°C/W
	TO-252		2.27 (Note)	°C/W
	PDFN5×6		3.2 (Note)	°C/W

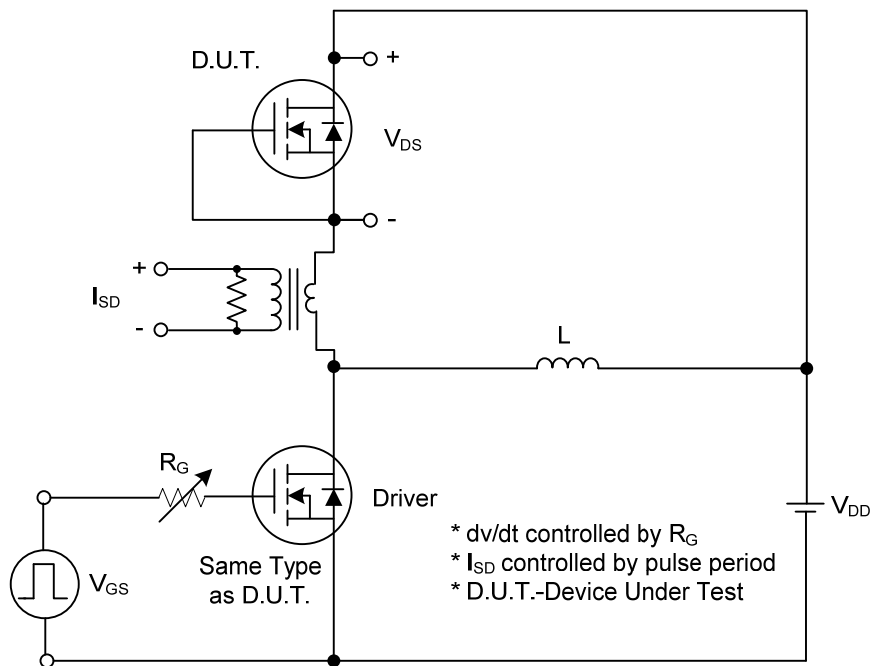
Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

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

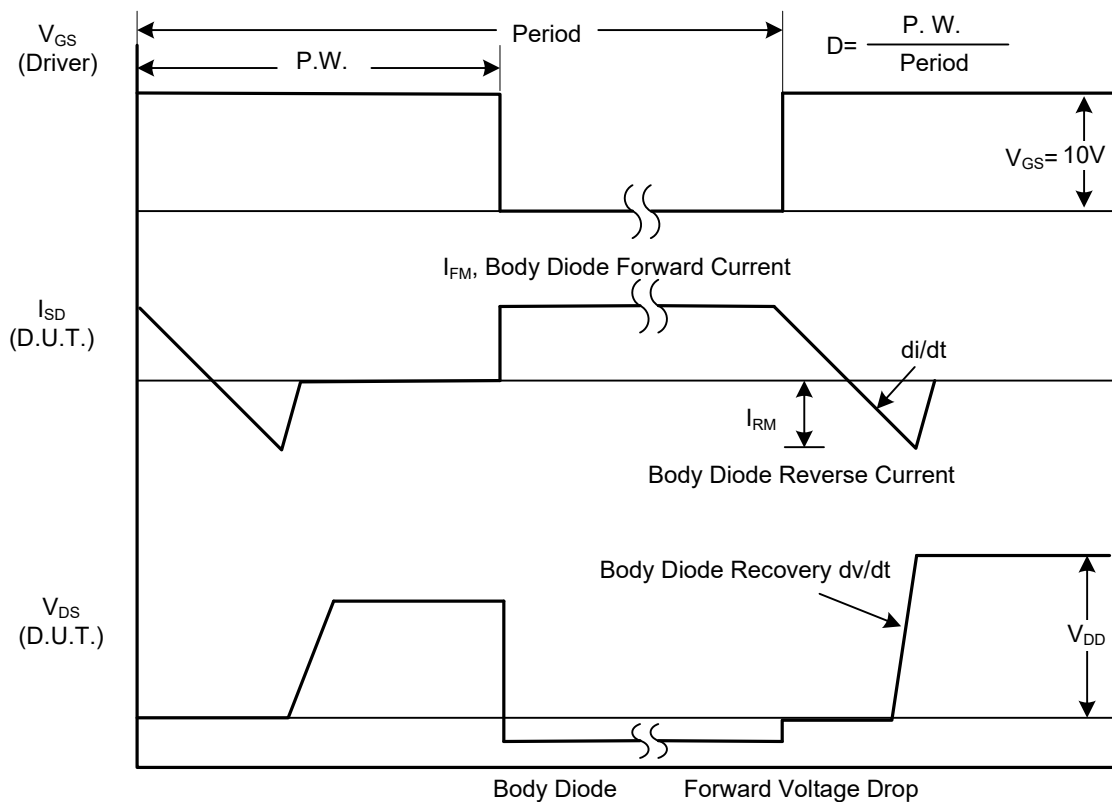
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	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	2.0		4.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =40A		12	14	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		2750		pF
Output Capacitance		C _{OSS}			285		pF
Reverse Transfer Capacitance		C _{RSS}			230		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =80V, V _{GS} =10V, I _D =80A		80		nC
Gate to Source Charge		Q _{GS}			20		nC
Gate to Drain Charge		Q _{GD}			32		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DD} =50V, V _{GS} =10V, I _D =80A, R _G =6Ω		16		ns
Rise Time		t _R			21		ns
Turn-OFF Delay Time		t _{D(OFF)}			56		ns
Fall-Time		t _F			34		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				80	A
Maximum Body-Diode Pulsed Current		I _{SM}				160	A
Drain-Source Diode Forward Voltage		V _{SD}	I _{SD} =80A			1.25	V
Body Diode Reverse Recovery Time		t _{rr}	I _S =30A, dI/dt=100A/μs		134		ns
Body Diode Reverse Recovery Charge		Q _{rr}			247		nC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

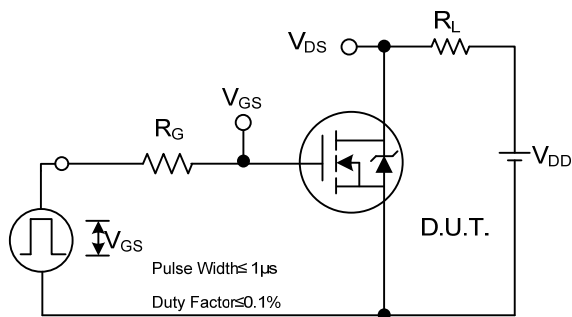


Peak Diode Recovery dv/dt Test Circuit

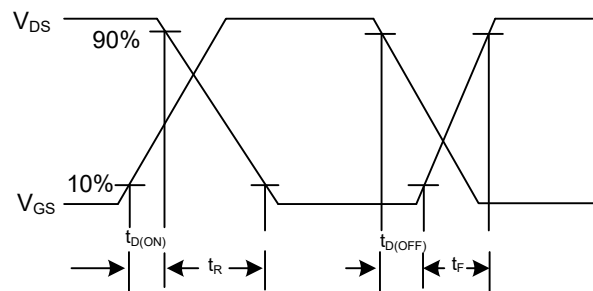


Peak Diode Recovery dv/dt Waveforms

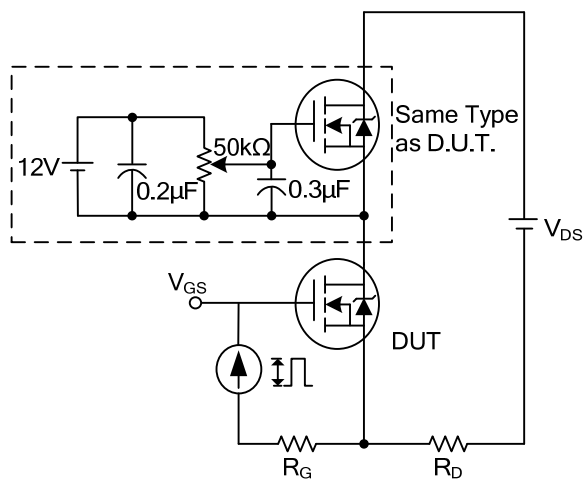
■ TEST CIRCUITS AND WAVEFORMS



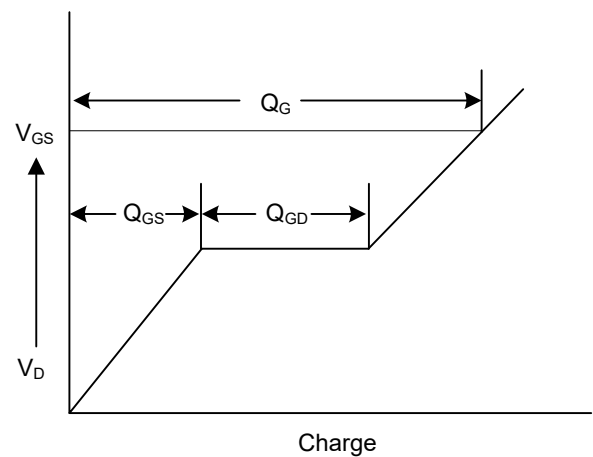
Switching Test Circuit



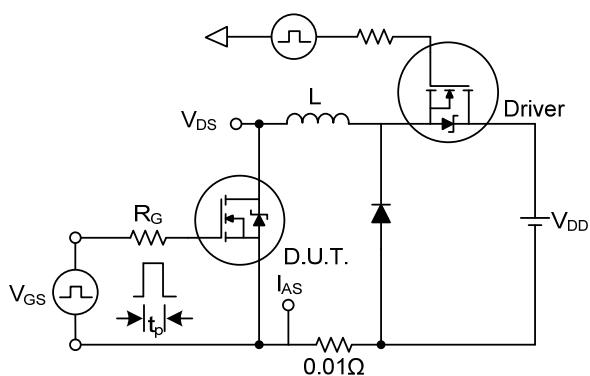
Switching Waveforms



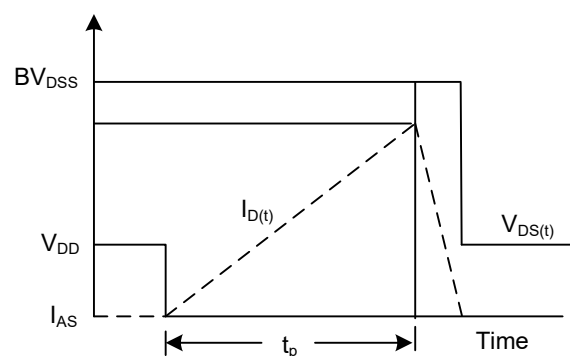
Gate Charge Test Circuit



Gate Charge Waveform

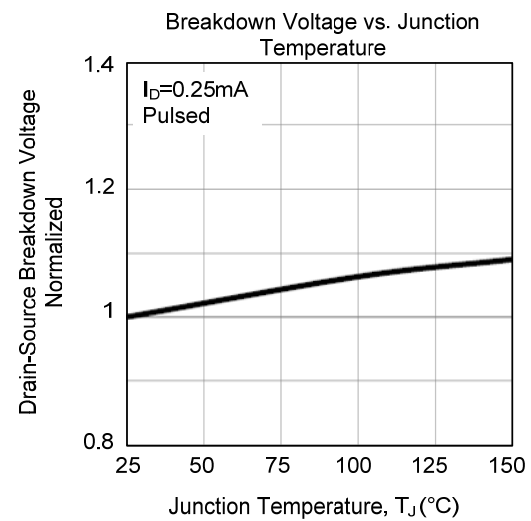
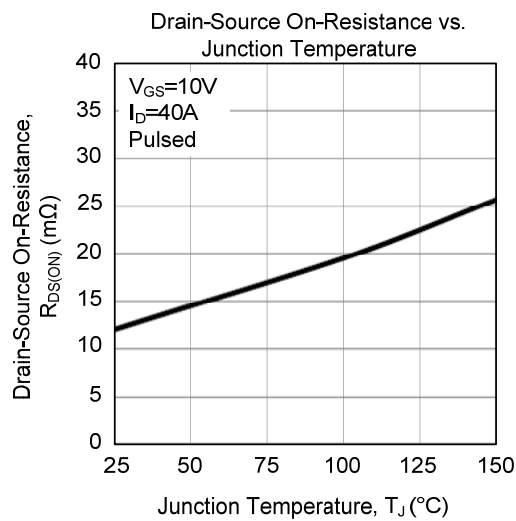
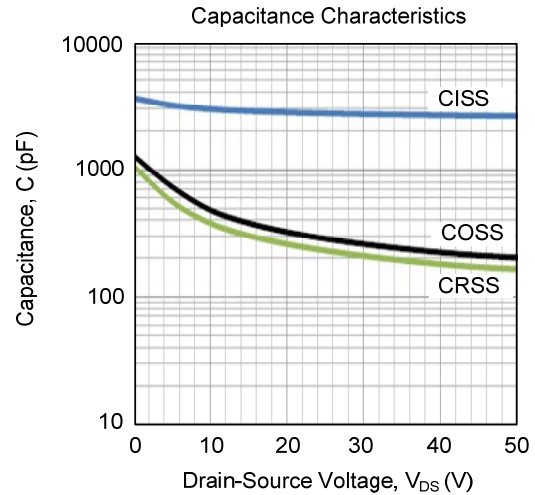
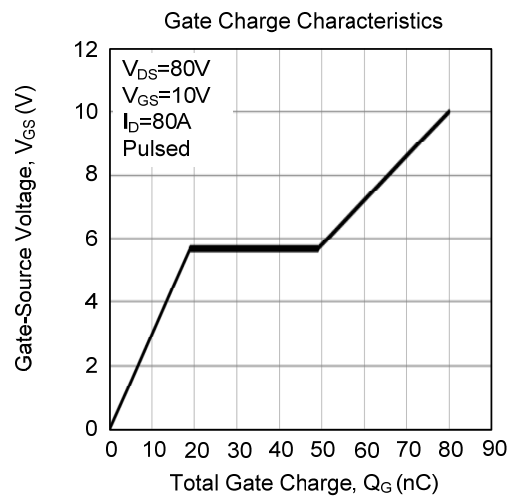
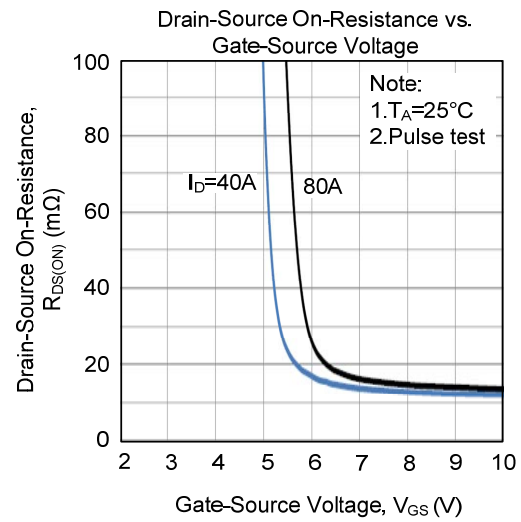
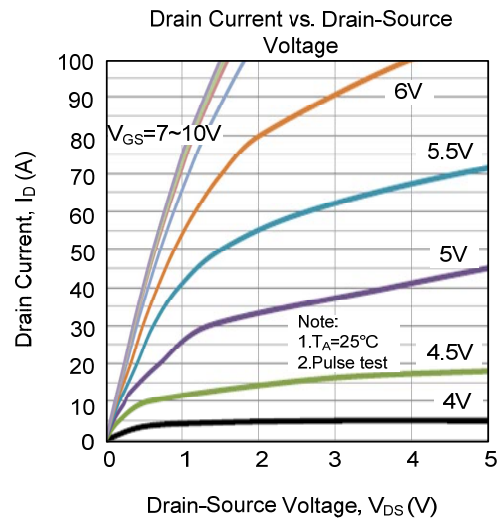


Unclamped Inductive Switching Test Circuit

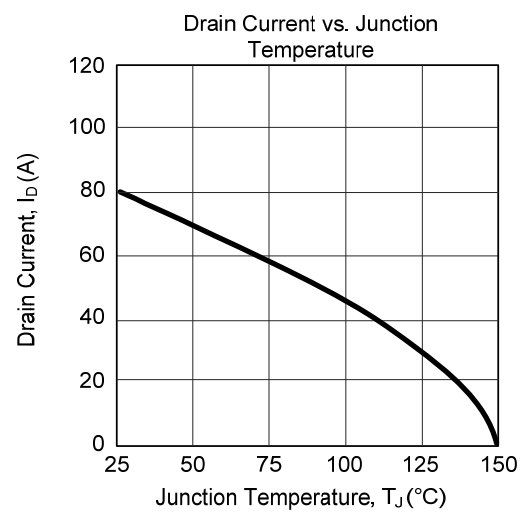
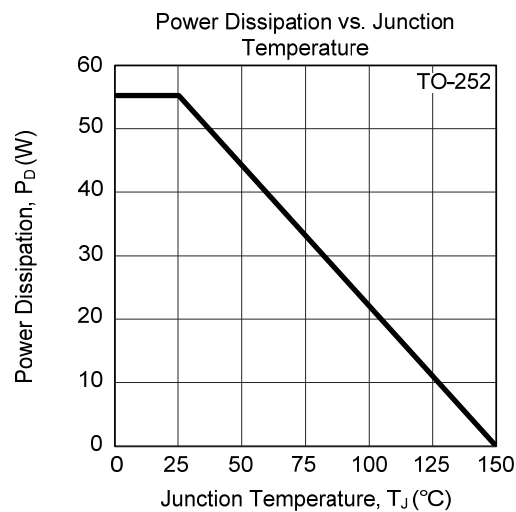
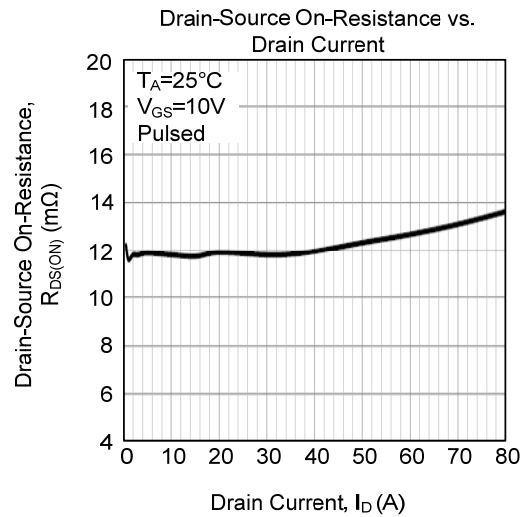
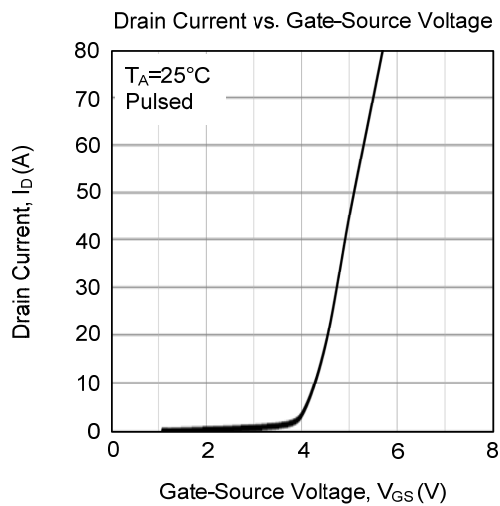
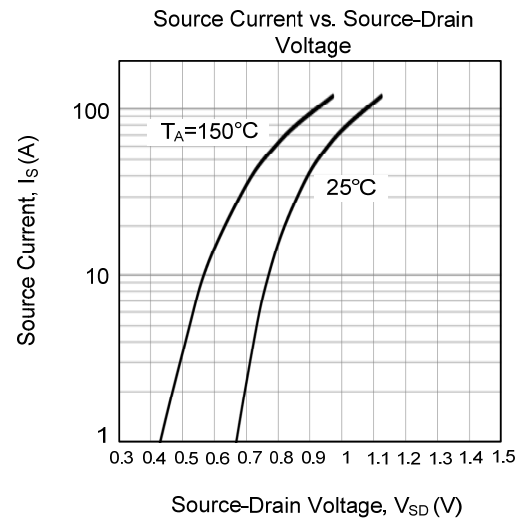
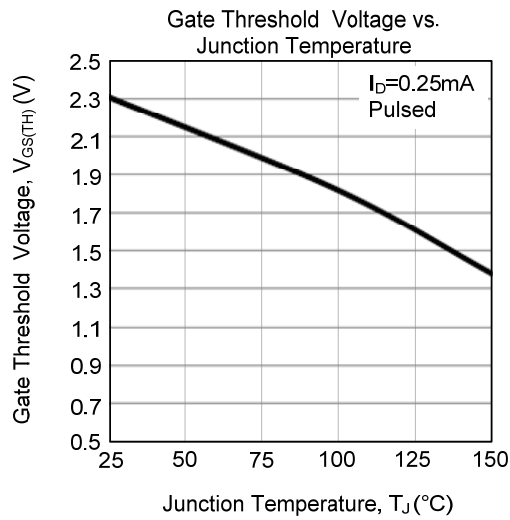


Unclamped Inductive Switching Waveforms

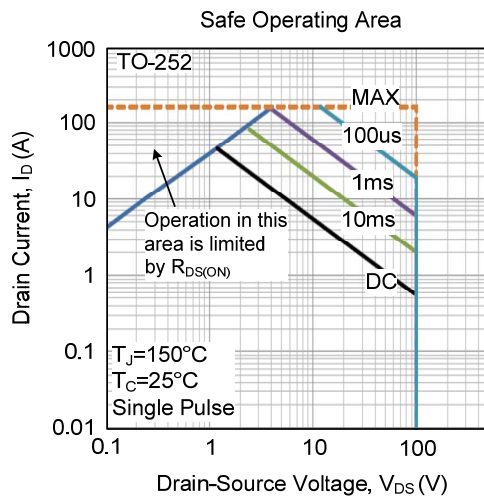
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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