



UTT36N10

Power MOSFET

36A, 100V N-CHANNEL POWER MOSFET

■ DESCRIPTION

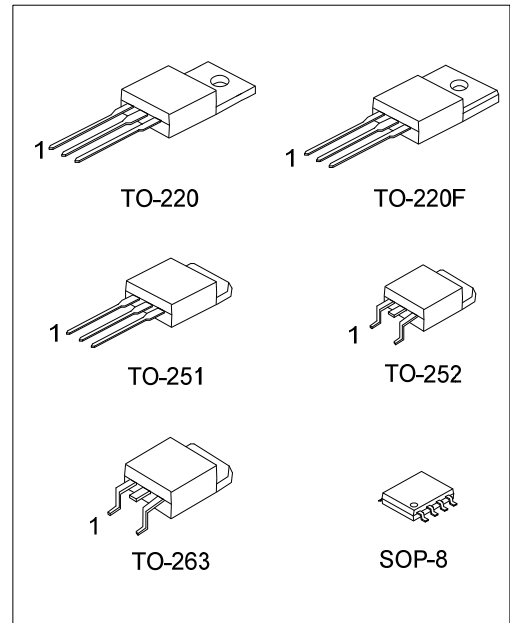
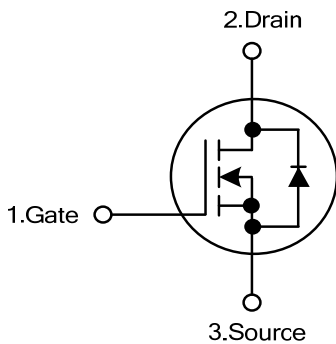
The UTC **UTT36N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **UTT36N10** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

■ FEATURES

* High Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT36N10L-TA3-T	UTT36N10G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT36N10L-TF3-T	UTT36N10G-TF3-T	TO-220F	G	D	S						Tube
UTT36N10L-TM3-T	UTT36N10G-TM3-T	TO-251	G	D	S						Tube
UTT36N10L-TN3-R	UTT36N10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT36N10L-TQ2-T	UTT36N10G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT36N10L-TQ2-R	UTT36N10G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT36N10L-S08-R	UTT36N10G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

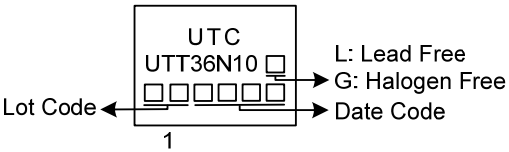
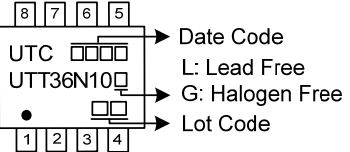
Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UTT36N10G-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF3: TO-220F, TM3: TO-251</p> <p>TN3: TO-252, TQ2: TO-263, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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UTT36N10

Power MOSFET

MARKING

TO-220 / TO-220F / TO-251 / TO-252 / TO-263	SOP-8
 <p>UTC UTT36N10 □ □ □ □ □ □ Lot Code ← → Date Code L: Lead Free G: Halogen Free 1</p>	 <p>UTC □ □ □ □ UTT36N10 □ ● □ □ 8 7 6 5 1 2 3 4 → Date Code → Lot Code L: Lead Free G: Halogen Free</p>

■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous ($V_{GS}=10\text{V}$) $T_c=25^\circ\text{C}$	I_D	36	A
	Pulsed	I_{DM}	72	A
Single Pulsed Avalanche Energy		E_{AS}	12 (Note 3)	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.5	V/ns
Power Dissipation	TO-220/TO-263	P_D	90	W
	TO-220F		36	W
	TO-251/TO-252		44	W
	SOP-8		5	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. $L=0.1\text{mH}$, $I_{AS}=16\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$.

■ THERMAL DATA

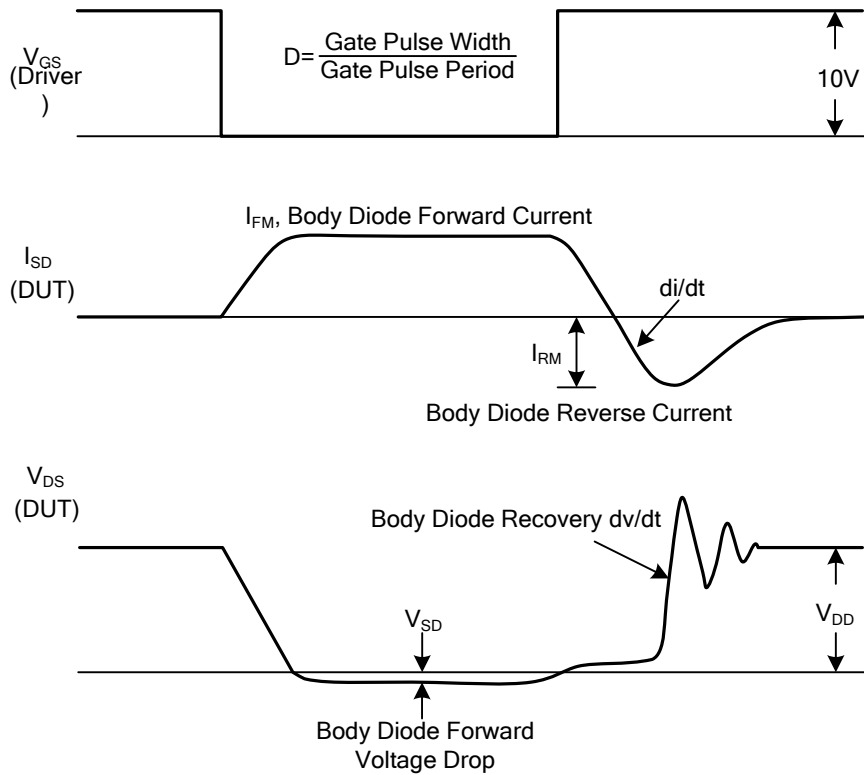
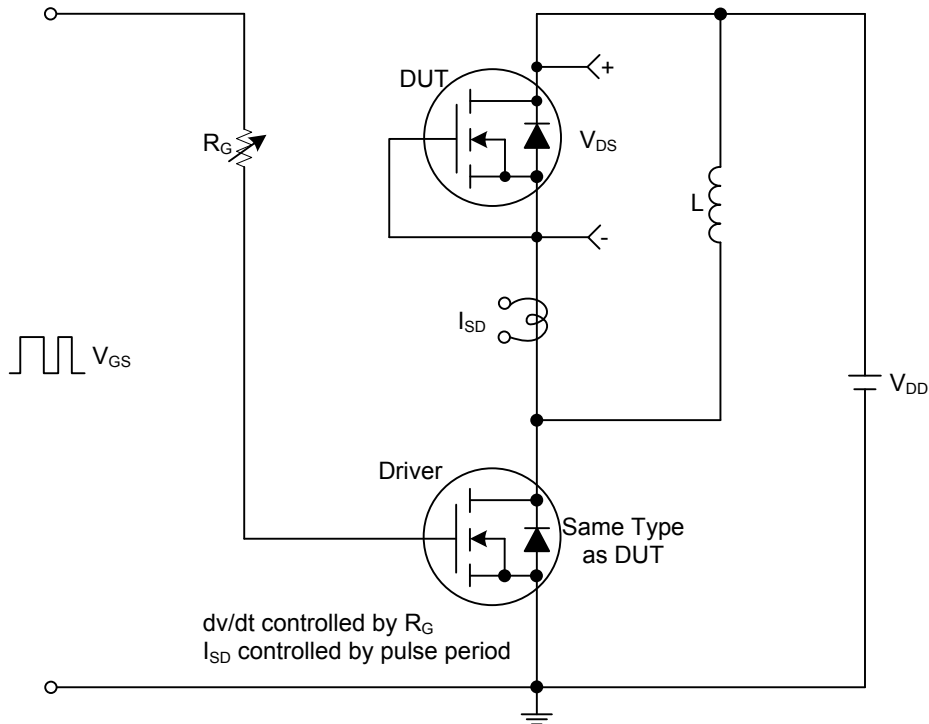
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-263	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
	TO-251/TO-252		110	$^\circ\text{C}/\text{W}$
	SOP-8		125(Note)	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220/TO-263	θ_{JC}	1.38	$^\circ\text{C}/\text{W}$
	TO-220F		3.47	$^\circ\text{C}/\text{W}$
	TO-251/TO-252		2.85 (Note)	$^\circ\text{C}/\text{W}$
	SOP-8		25 (Note)	$^\circ\text{C}/\text{W}$

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)

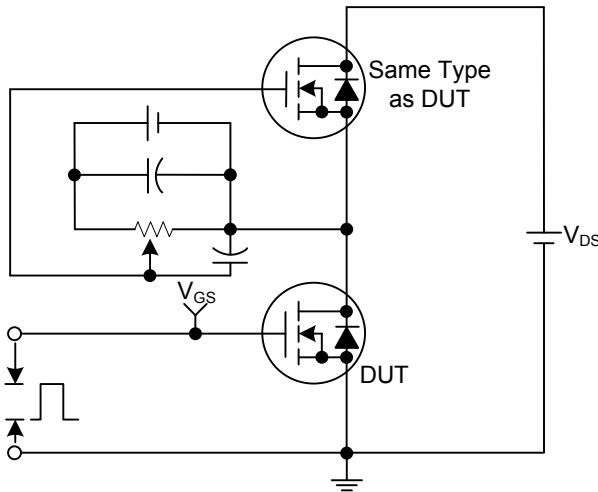
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	100			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS} V _{GS} =+20V, V _{DS} =0V V _{GS} =-20V, V _{DS} =0V			+100	nA
	Reverse				-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 =30A			44	mΩ
		V _{GS} =4.5V, I _D =15A			48	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		2650		pF
Output Capacitance	C _{OSS}			145		pF
Reverse Transfer Capacitance	C _{RSS}			100		pF
SWITCHING PARAMETERS						
Total Gate Charge at 10V	Q _G	V _{DD} =80V, I _D =36A, V _{GS} =10V		68		nC
Gate to Source Charge	Q _{GS}			9		nC
Gate to Drain Charge	Q _{GD}			12		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =50V, I _D =36A, V _{GS} =10V, R _G =3Ω		10		ns
Rise Time	t _R			18		ns
Turn-OFF Delay Time	t _{D(OFF)}			46		ns
Fall-Time	t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _{SD} =36A			1.4	V
Body Diode Reverse Recovery Time (Note 1)	t _{rr}	I _S =30A, V _{GS} =0V, dI _F /dt=100A/μs		51		nS
Body Diode Reverse Recovery Charge	Q _{rr}				56	

■ TEST CIRCUITS AND WAVEFORMS

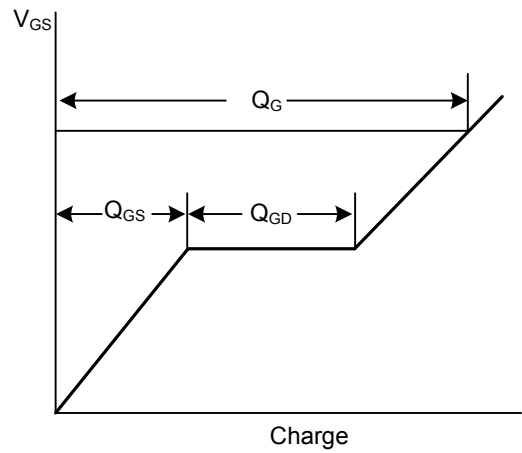


Peak Diode Recovery dv/dt Test Circuit and Waveforms

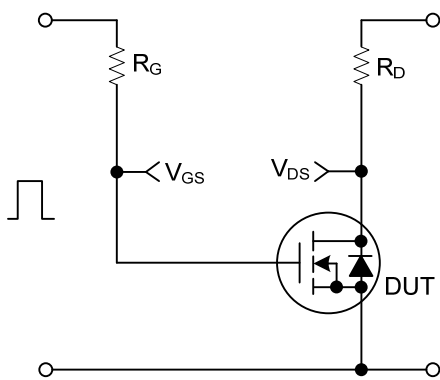
TEST CIRCUITS AND WAVEFORMS



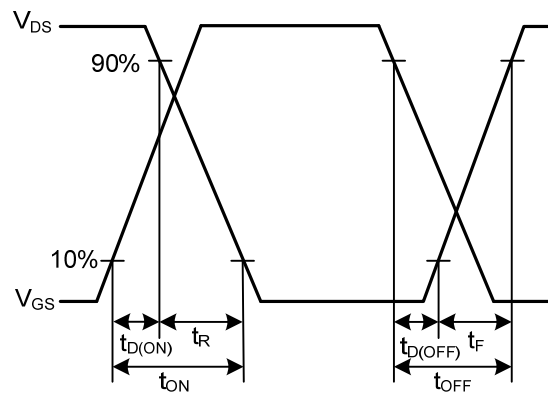
Gate Charge Test Circuit



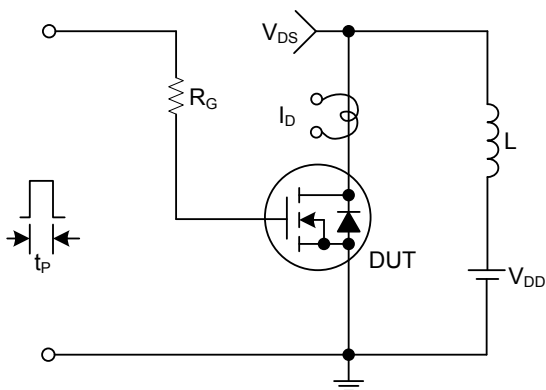
Gate Charge Waveforms



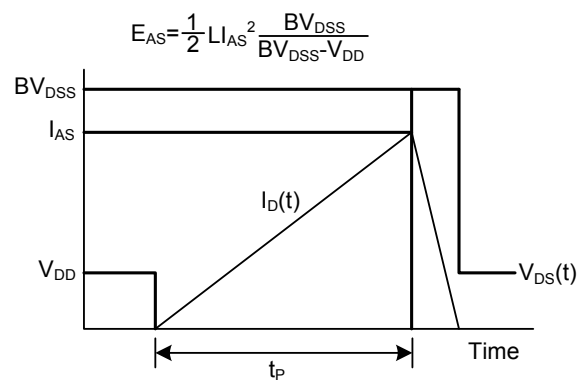
Resistive Switching Test Circuit



Resistive Switching Waveforms

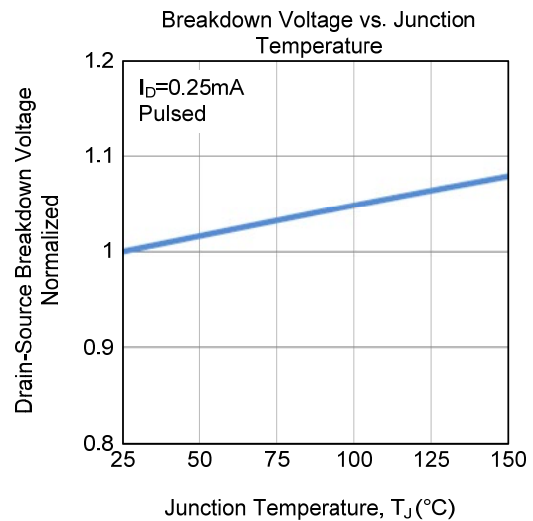
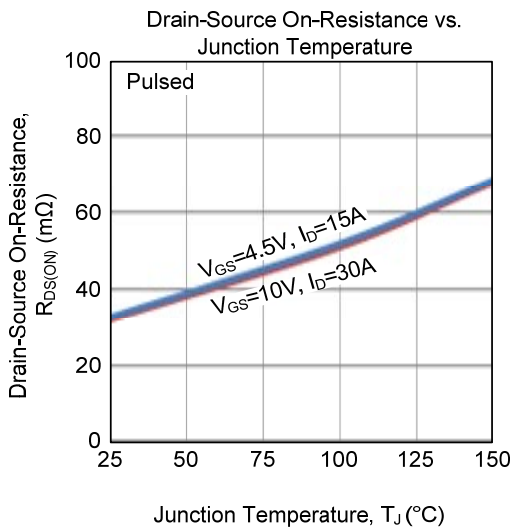
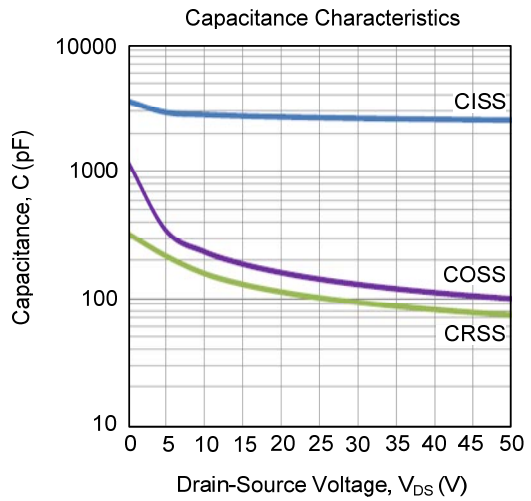
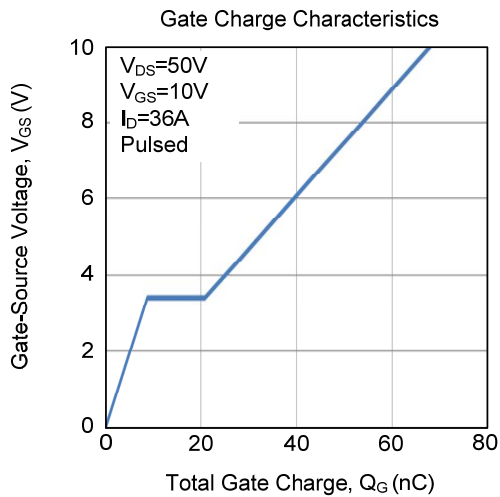
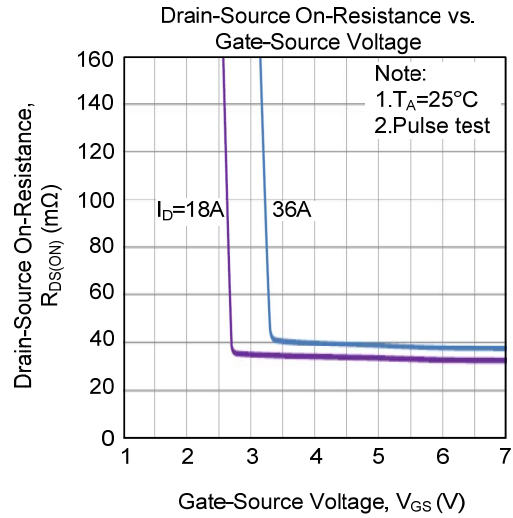
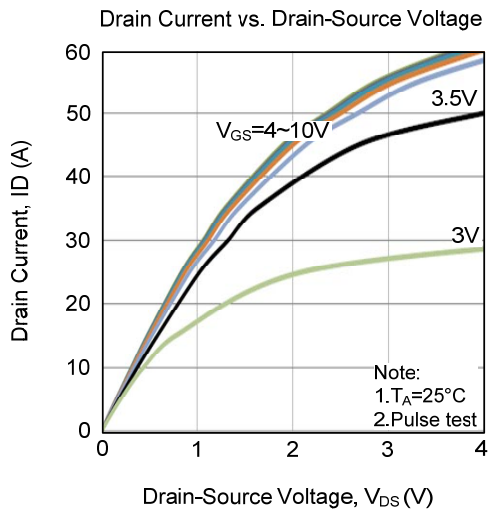


Unclamped Inductive Switching Test Circuit

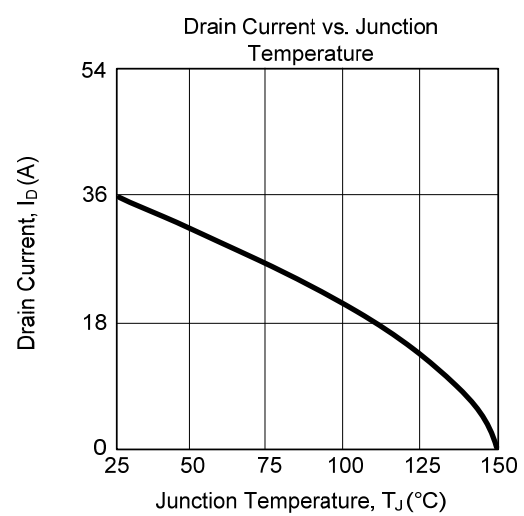
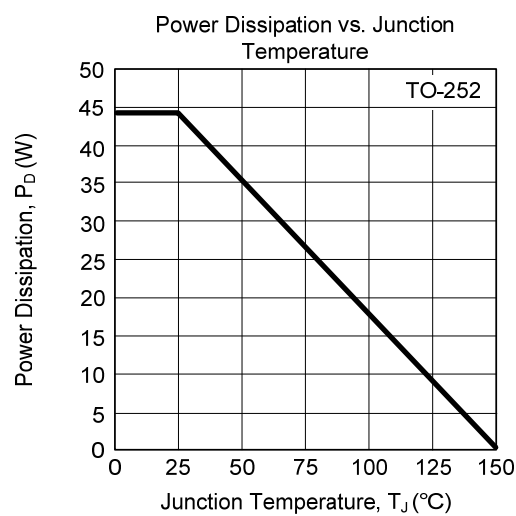
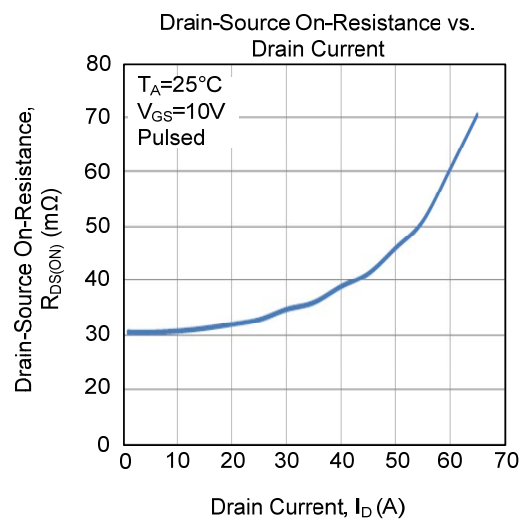
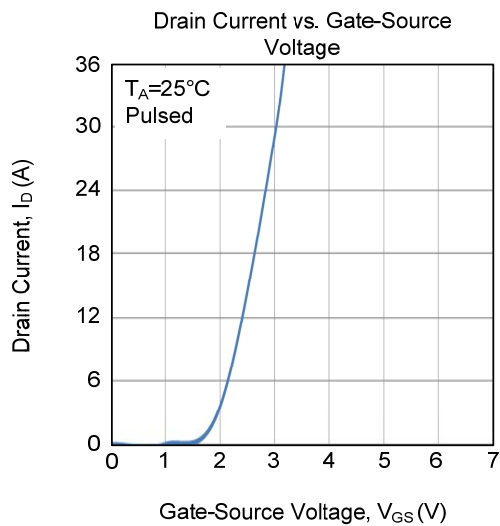
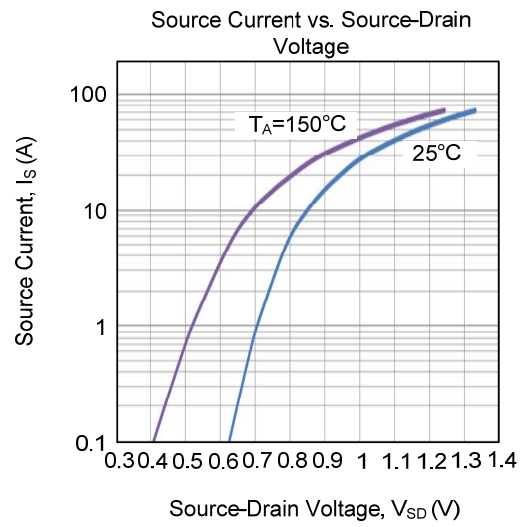
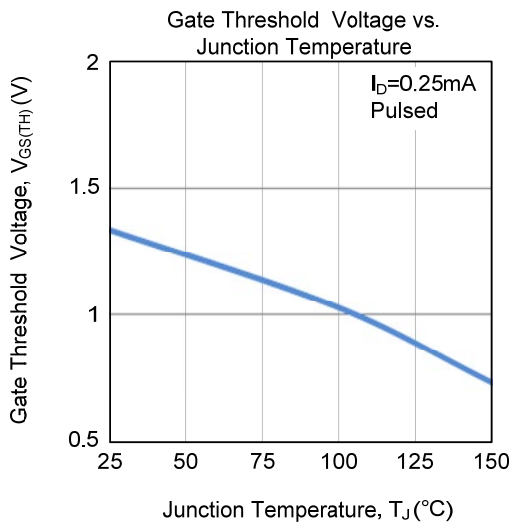


Unclamped Inductive Switching Waveforms

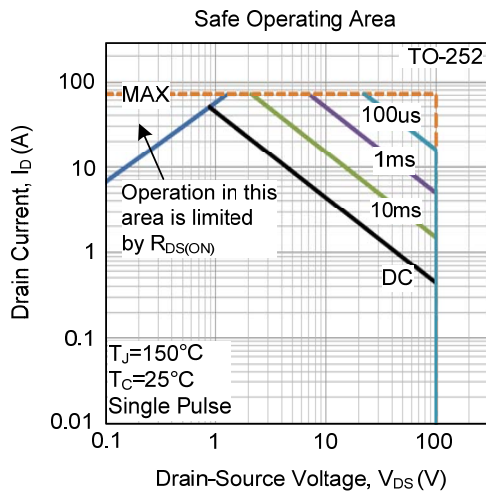
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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