



UTT30N10

Power MOSFET

30A, 100V N-CHANNEL POWER MOSFET

DESCRIPTION

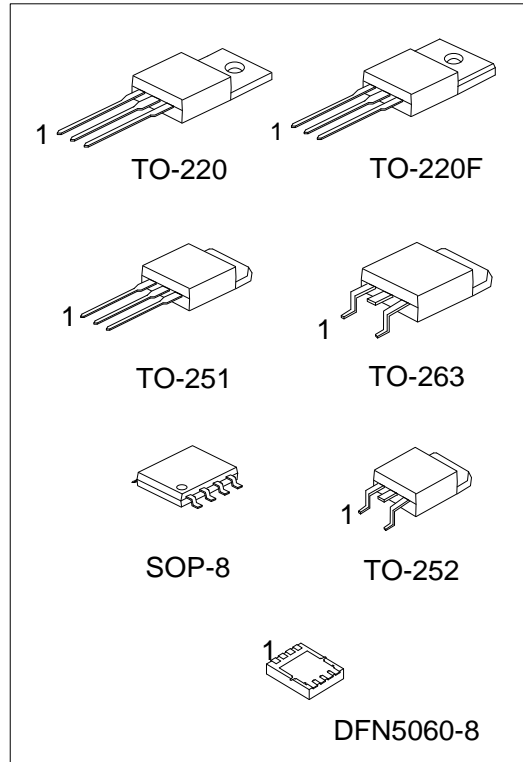
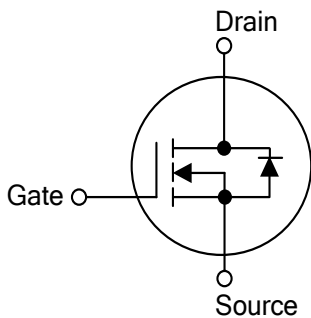
The UTC **UTT30N10** is a N-channel mode power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **UTT30N10** is suitable for high voltage synchronous rectifier and DC/DC converters, etc.

FEATURES

- * $R_{DS(ON)} \leq 52 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=30\text{A}$
- $R_{DS(ON)} \leq 72 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=15\text{A}$
- * High Switching Speed

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT30N10L-TA3-T	UTT30N10G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TF3-T	UTT30N10G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TM3-T	UTT30N10G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TN3-R	UTT30N10G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT30N10L-TQ2-T	UTT30N10G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UTT30N10L-TQ2-R	UTT30N10G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
UTT30N10L-S08-R	UTT30N10G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT30N10L-K08-5060-R	UTT30N10G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

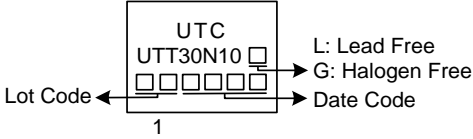
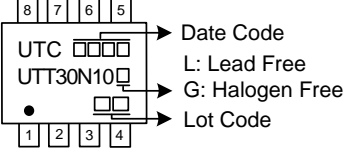
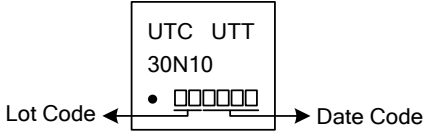
Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UTT30N10G-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF3: TO-220F, TM3: TO-251 TN3: TO-252, TQ2: TO-263, S08: SOP-8, K08-5060: DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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UTT30N10

Power MOSFET

MARKING

PACKAGE	MARKING
TO-220 / TO-220F TO-251 / TO-252 TO-263	 <p>UTC UTT30N10</p> <p>Lot Code ← → Date Code</p> <p>1</p> <p>L: Lead Free G: Halogen Free</p>
SOP-8	 <p>UTC UTT30N10</p> <p>Date Code L: Lead Free G: Halogen Free Lot Code</p>
DFN5060-8	 <p>UTC UTT 30N10</p> <p>Lot Code ← → Date Code</p>

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 www.flying1688.com

■ 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 (V _{GS} =10V) T _C =25°C	I _D	30	A
	Pulsed	I _{DM}	60	A
Single Pulsed Avalanche Energy (Note 2)		E _{AS}	17	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.2	V/ns
Power Dissipation	TO-220/TO-263	P _D	95	W
	TO-220F		34	W
	TO-251/TO-252		44	W
	SOP-8		1.6	W
	DFN5060-8		13.6	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=1mH, I_{AS}=5.8A, V_{DD}=50V, R_G=25 Ω, Starting T_J = 25°C

4. I_{SD}≤11A, di/dt≤200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

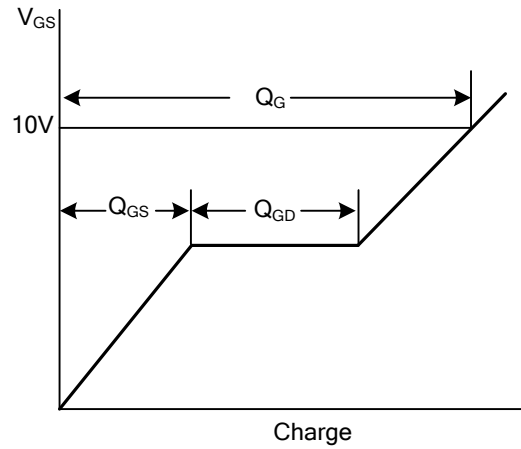
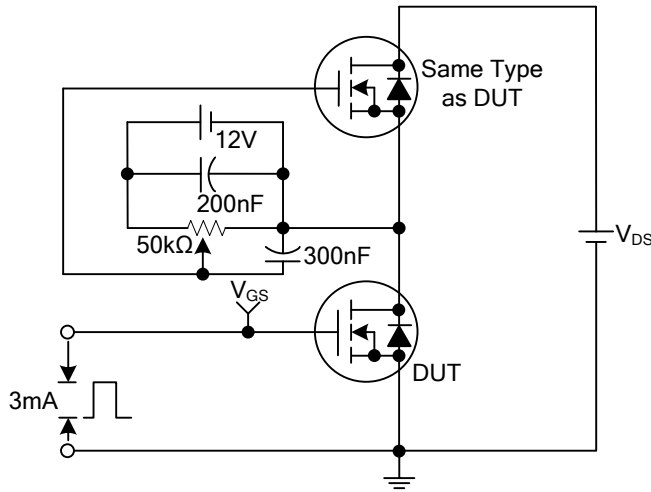
PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-263	θ _{JA}	62	°C/W
	TO-251/TO-252		110	°C/W
	SOP-8		50	°C/W
	DFN5060-8		65	°C/W
	TO-220/TO-263		1.31	°C/W
Junction to Case	TO-220F	θ _{JC}	3.38	°C/W
	TO-251/TO-252		2.85 (Note)	°C/W
	SOP-8		78 (Note)	°C/W
	DFN5060-8		9.1 (Note)	°C/W

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

■ **ELECTRICAL CHARACTERISTICS** ($T_C=25^\circ\text{C}$, unless otherwise specified)

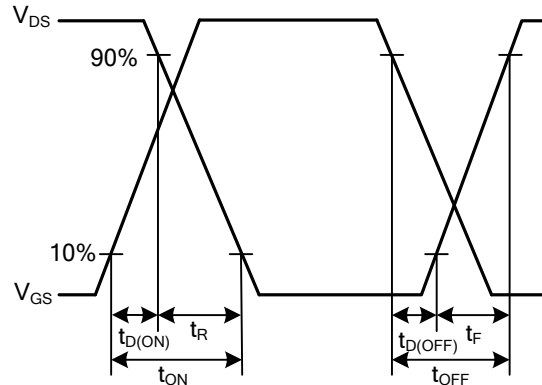
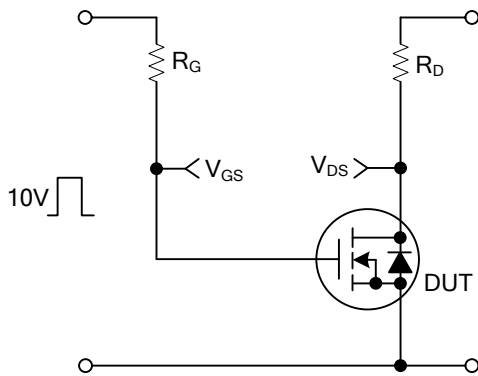
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=30\text{A}$			52	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$, $I_D=15\text{A}$			72	$\text{m}\Omega$
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		2200		pF
Output Capacitance	C_{OSS}			110		pF
Reverse Transfer Capacitance	C_{RSS}			75		pF
SWITCHING PARAMETERS						
Total Gate Charge at 10V	Q_G	$V_{DS}=80\text{V}$, $V_{GS}=10\text{V}$, $I_D=30\text{A}$, $I_G=1\text{mA}$		43		nC
Gate to Source Charge	Q_{GS}			6.5		nC
Gate to Drain Charge	Q_{GD}			9		nC
Turn-ON Time	t_{ON}	$V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $I_D=10\text{A}$, $R_{GS}=3.3\Omega$		10		ns
Turn-ON Delay Time	$t_{D(ON)}$			15		ns
Rise Time	t_R			35		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			16		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				30	A
Maximum Body-Diode Pulsed Current	I_{SM}				60	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_{SD}=30\text{A}$			1.25	V
Body Diode Reverse Recovery Time	t_{rr}	$I_S=30\text{A}$, $V_{GS}=0\text{V}$		36		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$di_F/dt=100\text{A}/\mu\text{s}$		50		μC

TEST CIRCUITS AND WAVEFORMS



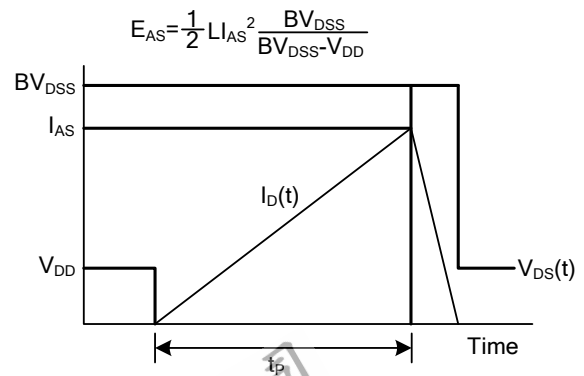
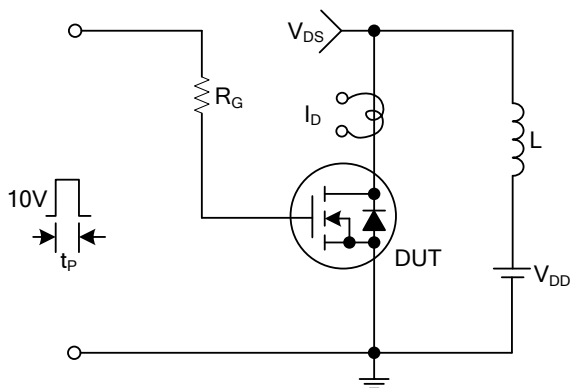
Gate Charge Test Circuit

Gate Charge Waveforms



Resistive Switching Test Circuit

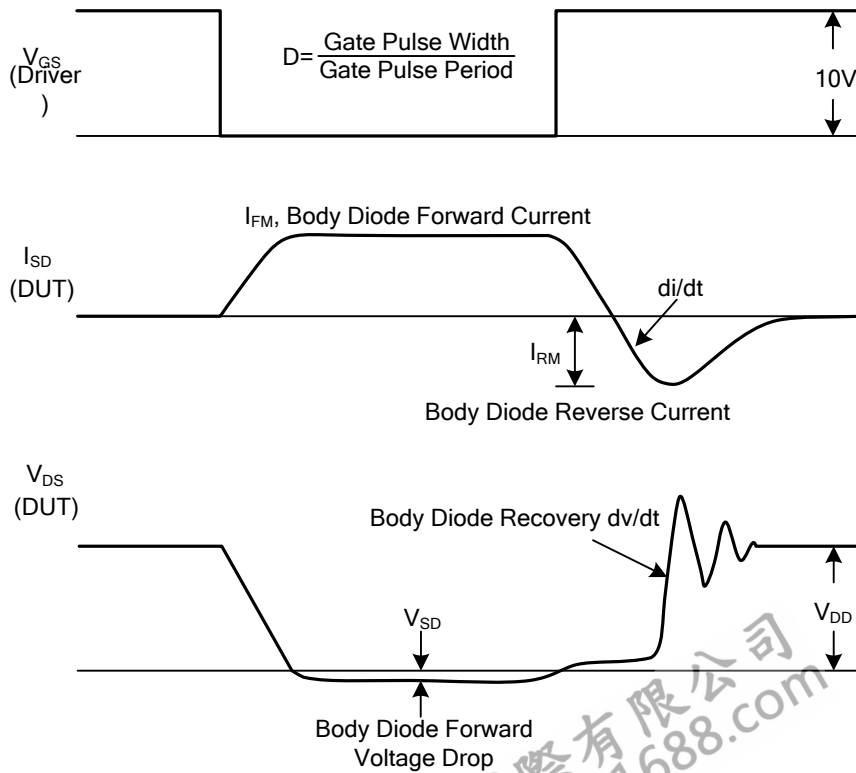
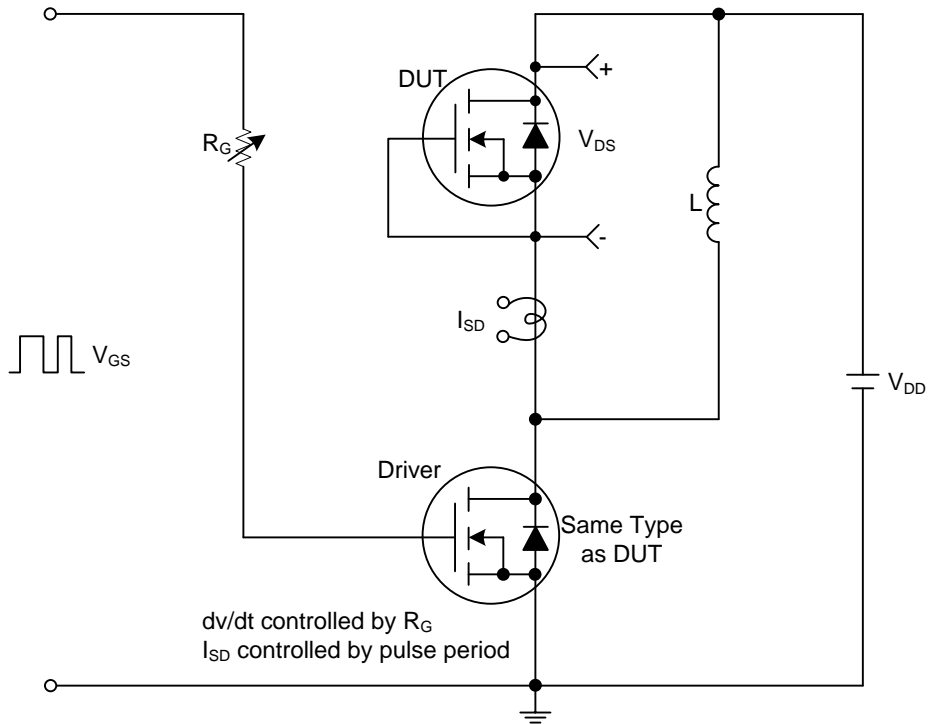
Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit

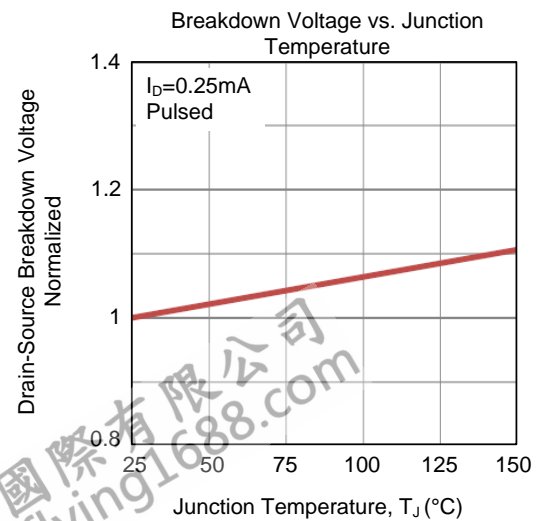
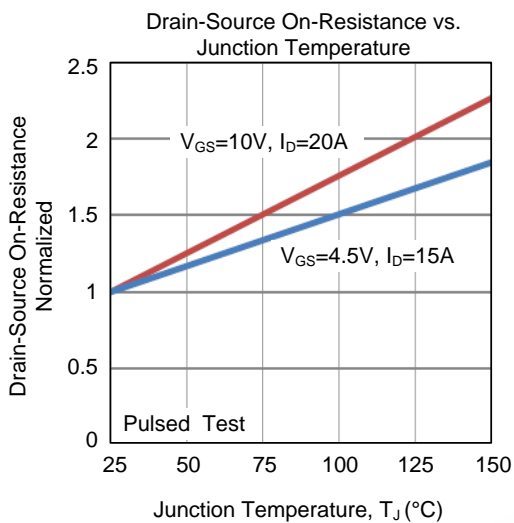
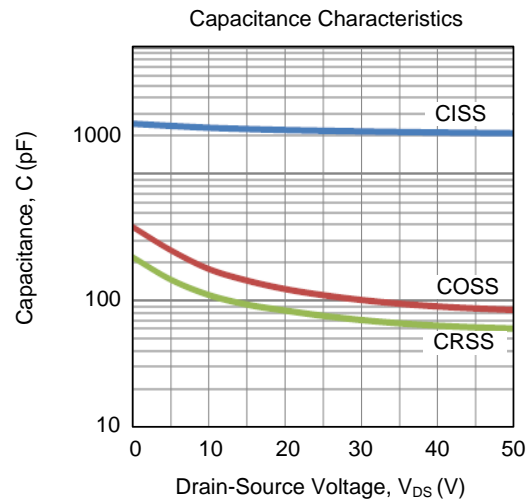
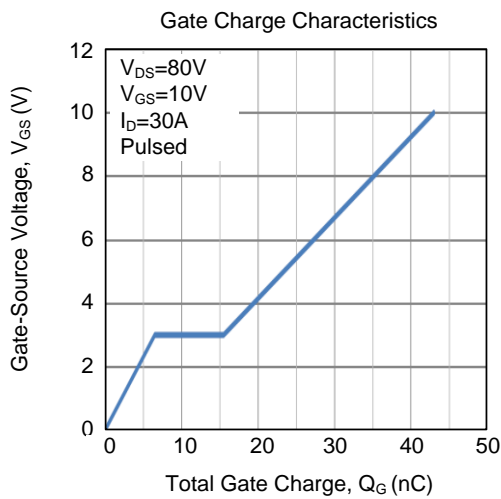
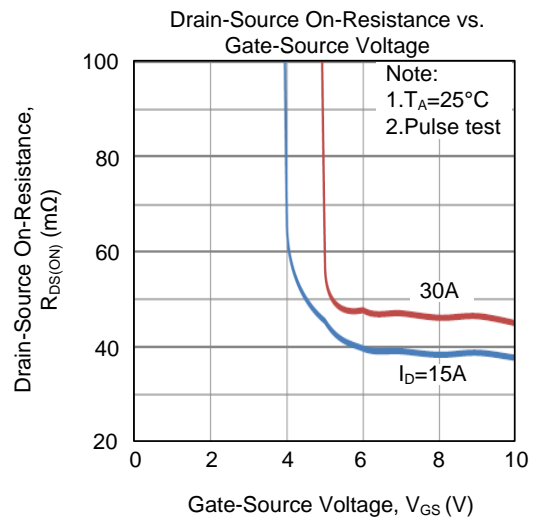
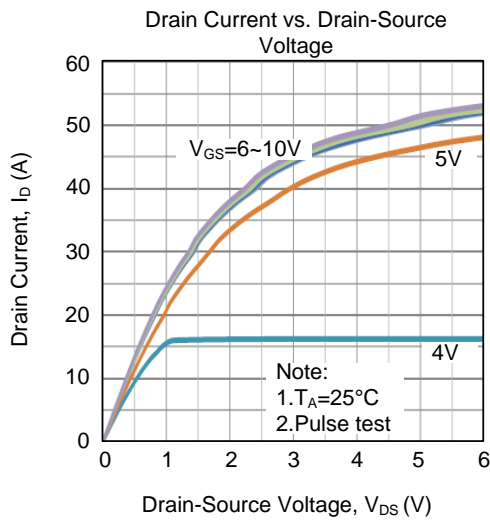
Unclamped Inductive Switching Waveforms

TEST CIRCUITS AND WAVEFORMS

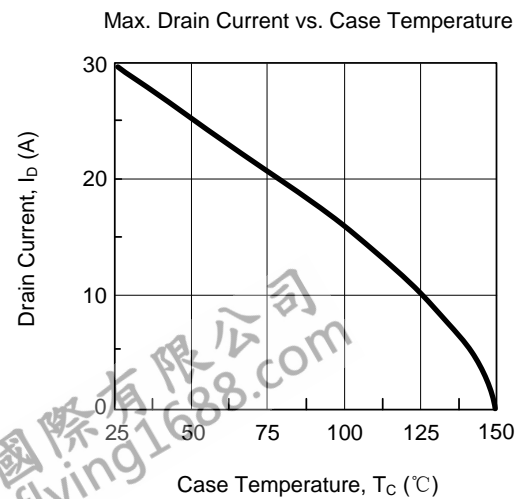
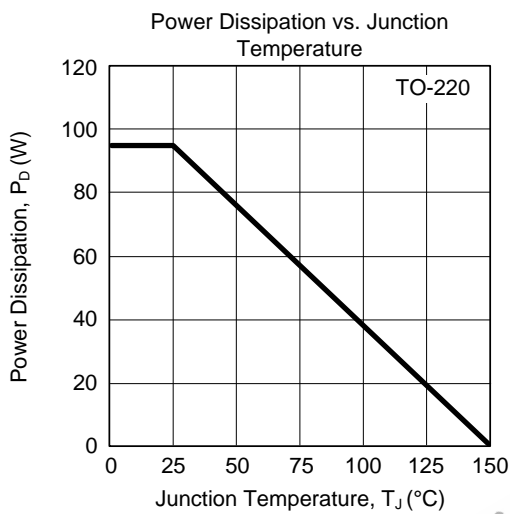
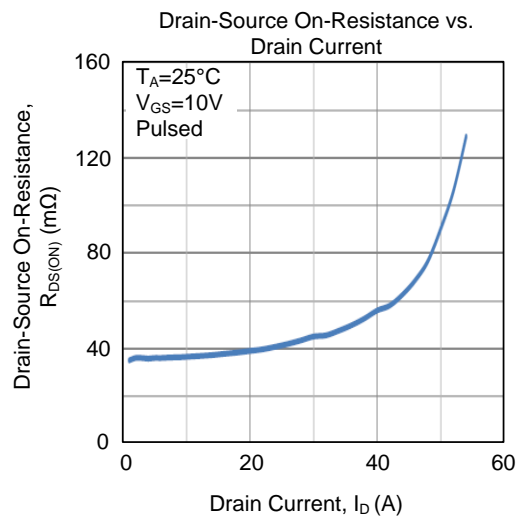
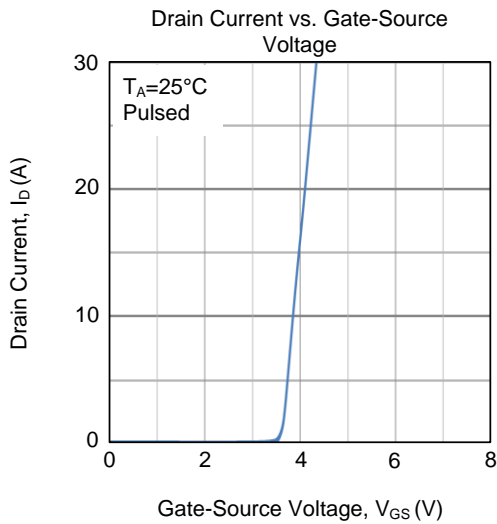
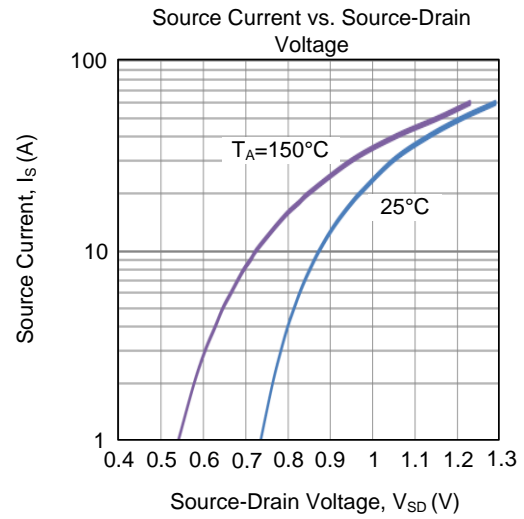
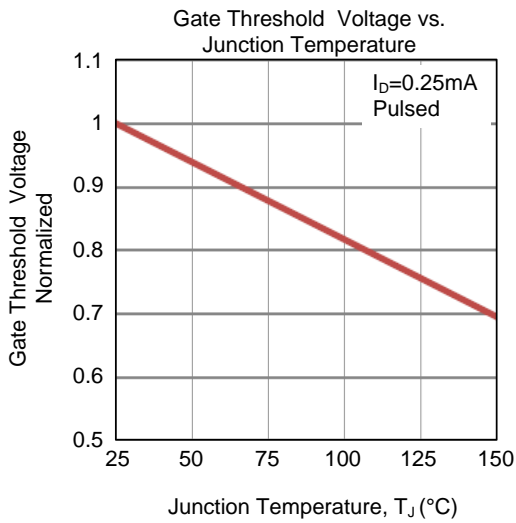


Peak Diode Recovery dv/dt Test Circuit and Waveforms

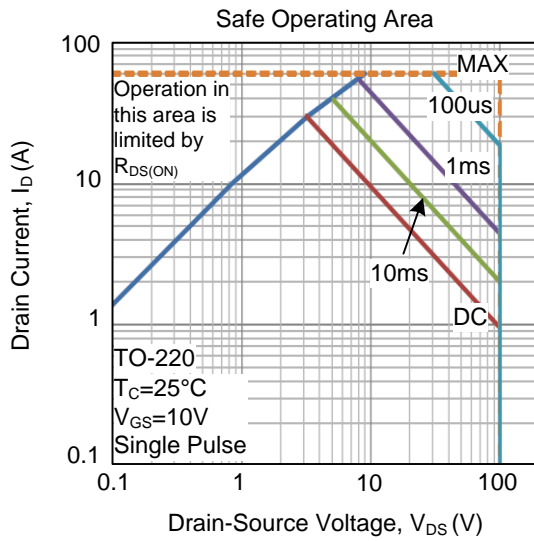
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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