



UF634

Power MOSFET

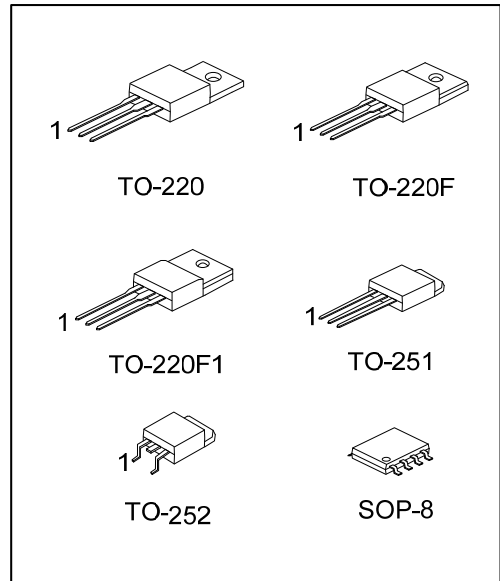
ADVANCED POWER MOSFET

■ DESCRIPTION

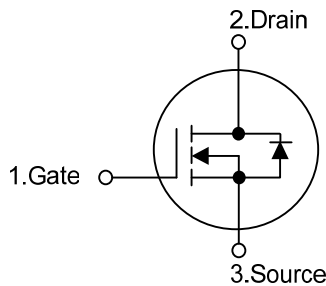
The UTC **UF634** is a N-channel Power MOSFET and it uses UTC advanced technology to provide customers with lower $R_{DS(ON)}$, improved gate charge and so on.

■ FEATURES

- * $R_{DS(ON)} \leq 0.45\Omega$ @ $V_{GS}=10V, I_D=8.1A$
- * Lower Input Capacitance
- * Improved Gate Charge
- * Lower Leakage Current: $10\mu A$ (MAX.) @ $V_{DS} = 250V$
- * Avalanche Rugged Technology
- * Rugged Gate Oxide Technology
- * Extended Safe Operating Area



■ SYMBOL



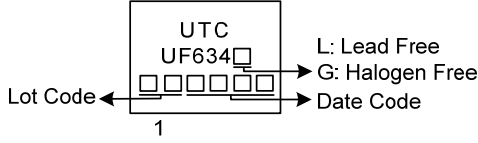
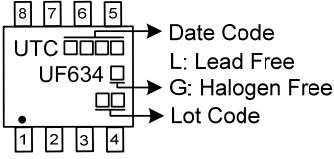
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing	
Lead Free	Halogen Free		1	2	3	4	5	6	7	8		
UF634L-TA3-T	UF634G-TA3-T	TO-220	G	D	S	-	-	-	-	-	-	Tube
UF634L-TF1-T	UF634G-TF1-T	TO-220F1	G	D	S	-	-	-	-	-	-	Tube
UF634L-TF3-T	UF634G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	-	Tube
UF634L-TM3-T	UF634G-TM3-T	TO-251	G	D	S	-	-	-	-	-	-	Tube
UF634L-TN3-R	UF634G-TN3-R	TO-252	G	D	S	-	-	-	-	-	-	Tape Reel
UF634L-S08-R	UF634G-S08-R	SOP-8	S	S	S	G	D	D	D	D	D	Tape Reel

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

<p>UF634G-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, TF1: TO-220F1, TF3:TO-220F TM3: TO-251, TN3: TO-252, S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-220 / TO-220F TO-220F1 / TO-251 / TO-252	SOP-8
 <p>UTC UF634</p> <p>Lot Code ←</p> <p>1</p> <p>→ L: Lead Free → G: Halogen Free → Date Code</p>	 <p>8 7 6 5</p> <p>UTC</p> <p>UF634</p> <p>→ Date Code → L: Lead Free → G: Halogen Free → Lot Code</p> <p>1 2 3 4</p>

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

PARAMETER		SYMBOL	RATINGS	UNIT
Gate-to-Source Voltage		V_{GS}	± 30	V
Drain-to-Source Voltage		V_{DSS}	250	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	8.1	A
Drain Current-Pulsed (Note 2)		I_{DM}	32.4	A
Avalanche Current (Note 2)		I_{AR}	8.1	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	205	mJ
Repetitive Avalanche Energy (Note 2)		E_{AR}	7.4	mJ
Power Dissipation	TO-220	P_D	74	W
	TO-220F/TO-220F1		38	W
	TO-251/TO-252		50	W
	SOP-8		5	W
Operating 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. $L=6.24\text{mH}$, $I_{AS}=8.1\text{A}$, $V_{DD}=50\text{V}$, $R_G=27\ \Omega$, Starting $T_J=25^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F1	θ_{JA}	62.5	$^\circ\text{C/W}$
	TO-220F			
	TO-251/TO-252			
	SOP-8			
Junction to Case	TO-220	θ_{JC}	1.69	$^\circ\text{C/W}$
	TO-220F/TO-220F1		3.29	$^\circ\text{C/W}$
	TO-251/TO-252		2.5 (Note)	$^\circ\text{C/W}$
	SOP-8		24 (Note)	$^\circ\text{C/W}$

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)

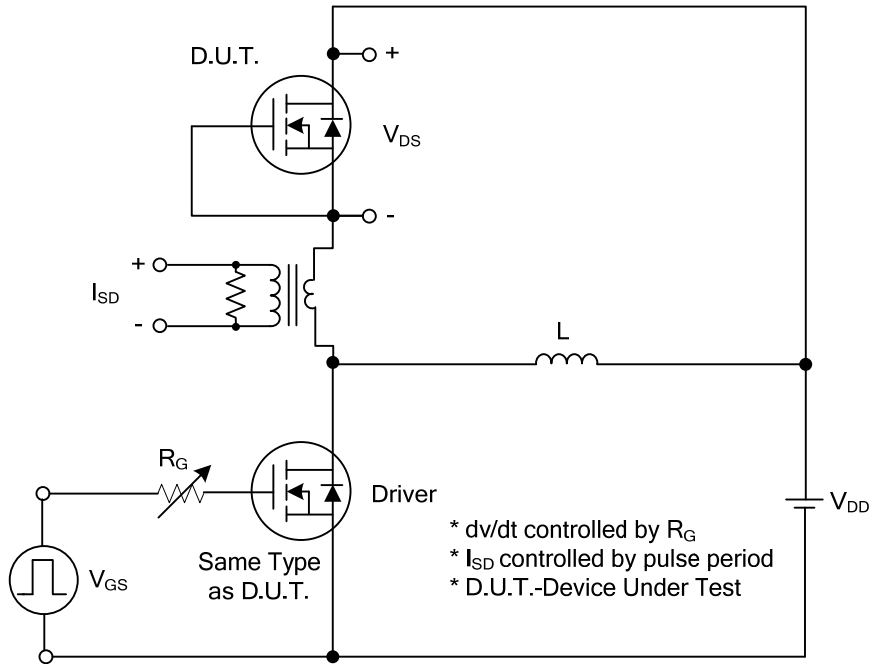
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	250			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =250V			10	μA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±30V			±100	nA
ON CHARACTERISTICS						
Gate 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 =8.1A			0.45	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		670	950	pF
Output Capacitance	C _{OSS}			135	130	pF
Reverse Transfer Capacitance	C _{RSS}			25	60	pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =200V, I _D =8.1A (Note 1, 2)		20	40	nC
Gate to Source Charge	Q _{GS}			5		nC
Gate to Drain Charge	Q _{GD}			6.6		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =100V, I _D =8.1A, R _G =25Ω (Note 1, 2)		7	40	ns
Rise Time	t _R			17	40	ns
Turn-OFF Delay Time	t _{D(OFF)}			18	120	ns
Fall-Time	t _F			16	50	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I _S				8.1	A
Pulsed-Source Current (Note 1)	I _{SM}				32.4	A
Drain-Source Diode Forward Voltage (Note 2)	V _{SD}	I _S =8.1A, V _{GS} =0V, T _J =25°C			1.5	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =8.1A, V _{GS} =0V, dI _F /dt=100A/μs		170		ns
Reverse Recovery Charge	Q _{rr}			1.13		μC

Note: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

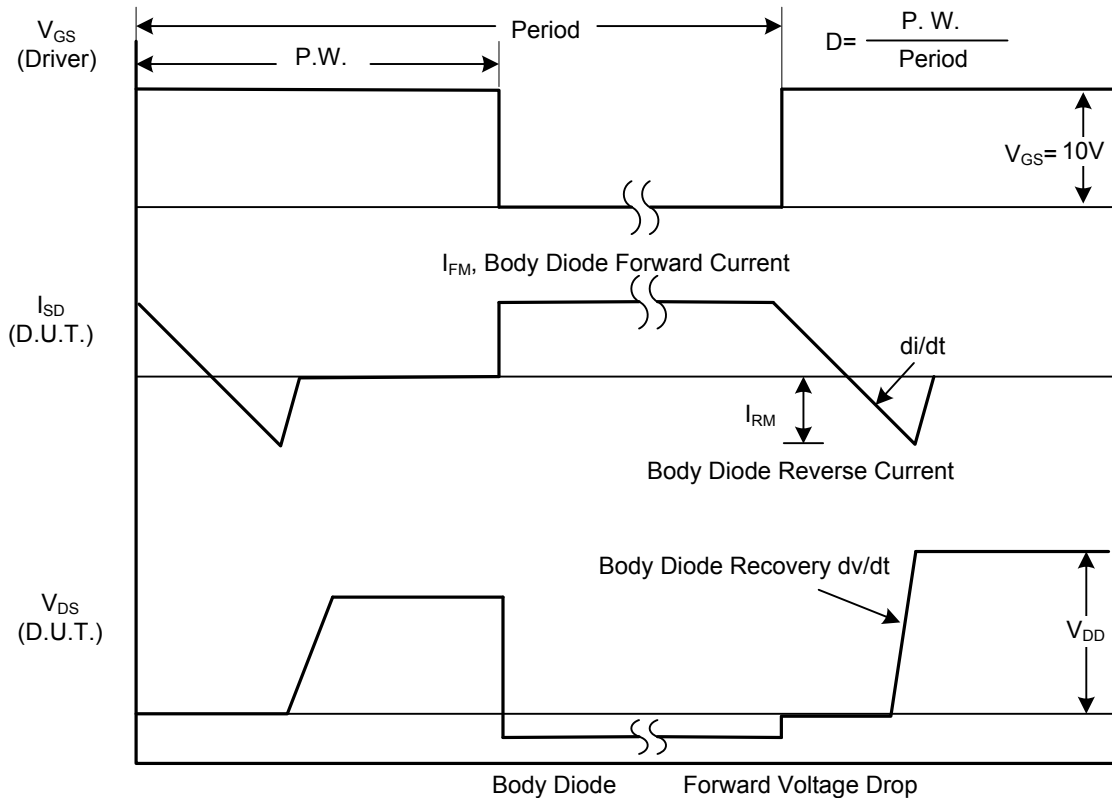
2. Pulse Test: Pulse Width = 250μs, Duty Cycle ≤2%.

3. Essentially Independent of Operating Temperature.

■ TEST CIRCUITS AND WAVEFORMS

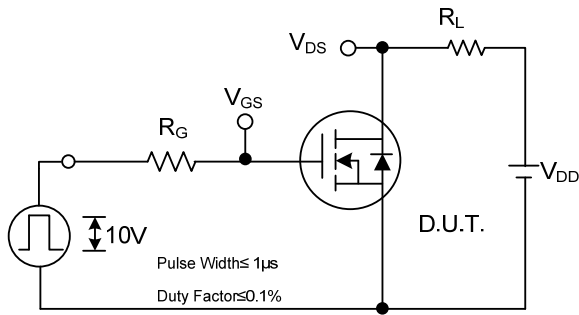


Peak Diode Recovery dv/dt Test Circuit

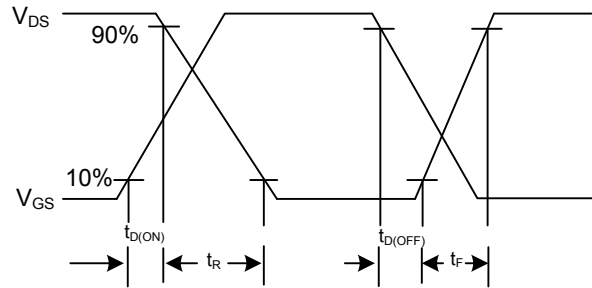


Peak Diode Recovery dv/dt Waveforms

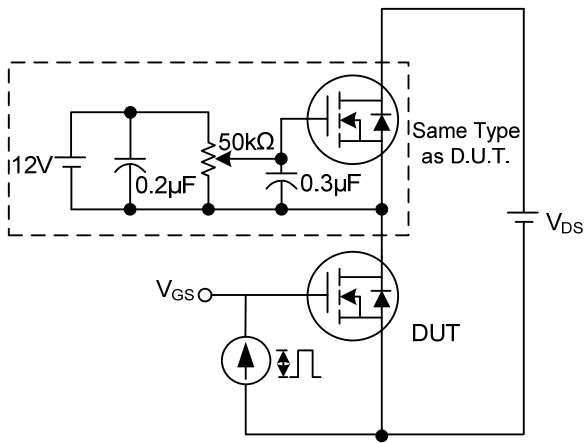
■ TEST CIRCUITS AND WAVEFORMS



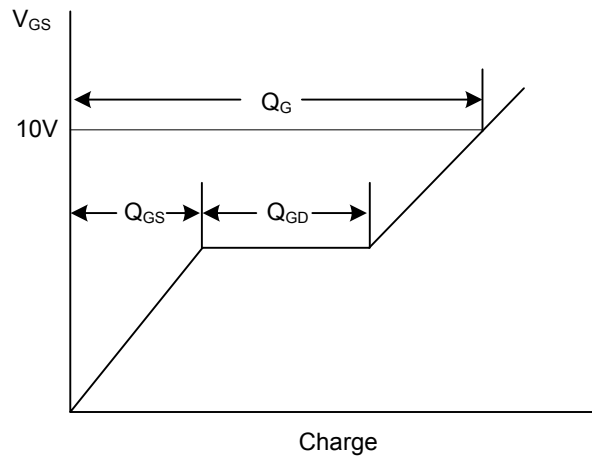
Switching Test Circuit



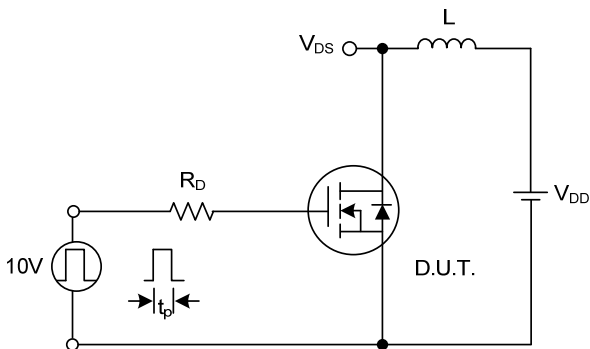
Switching Waveforms



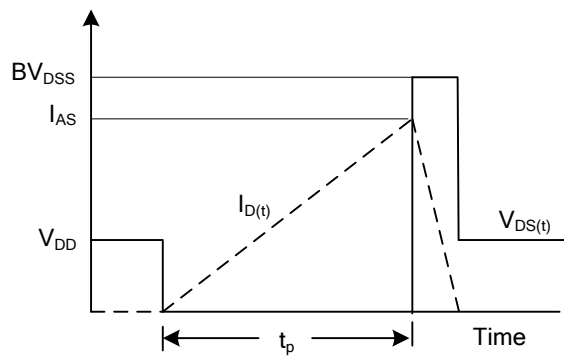
Gate Charge Test Circuit



Gate Charge Waveform

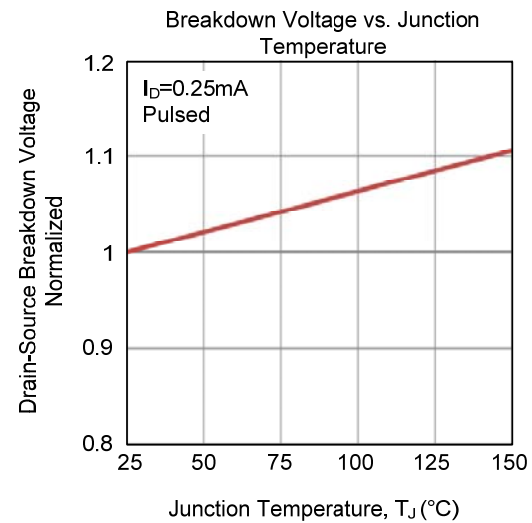
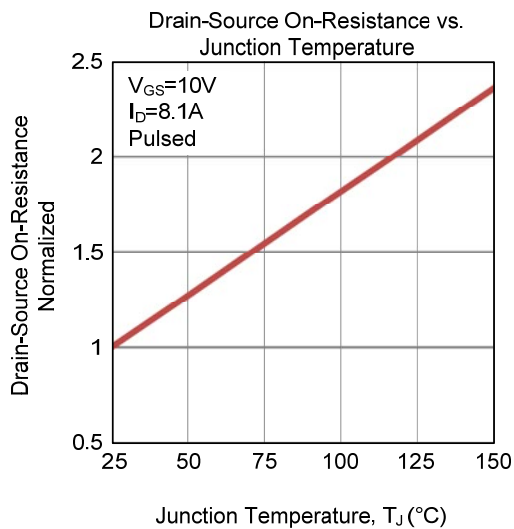
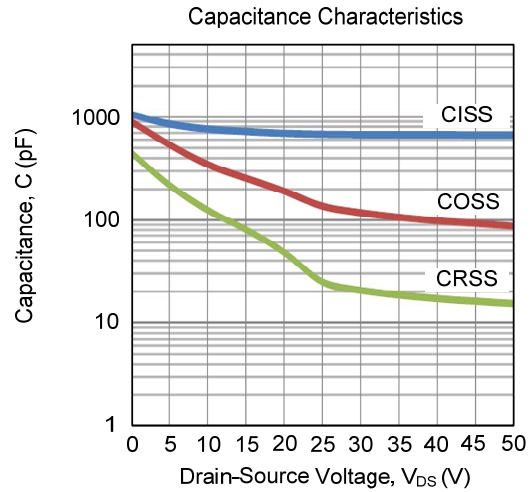
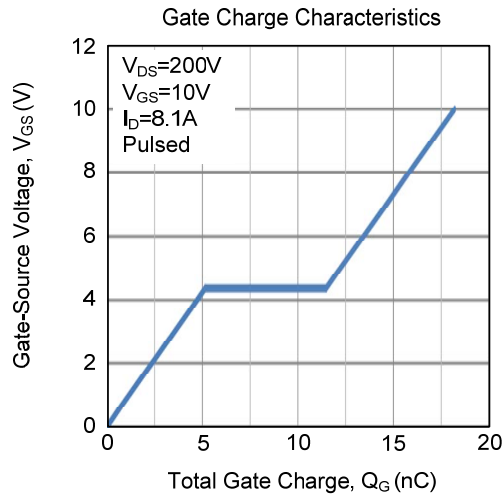
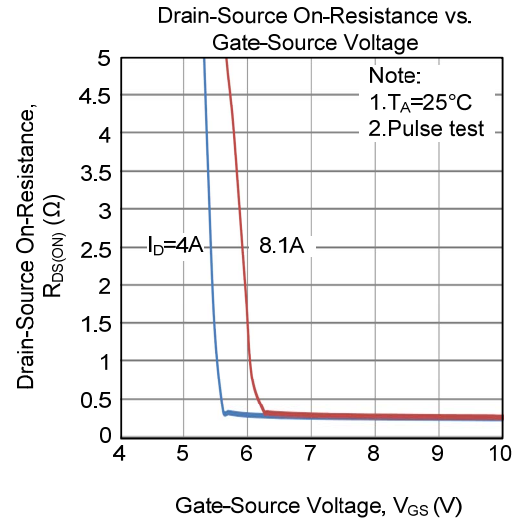
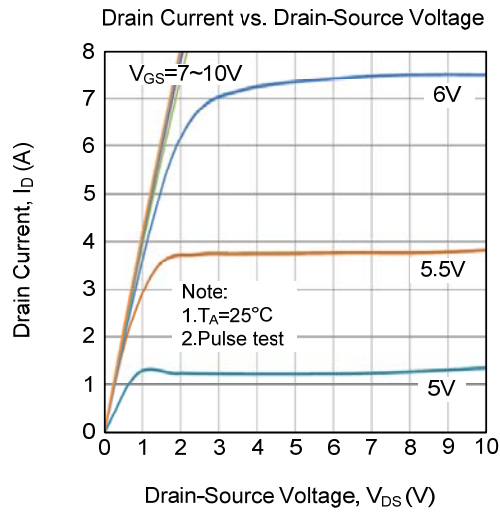


Unclamped Inductive Switching Test Circuit

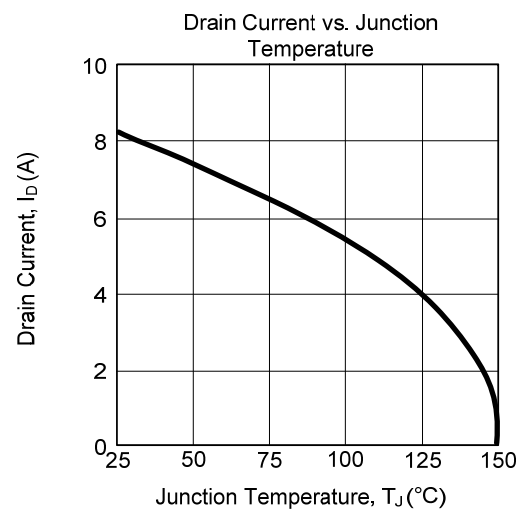
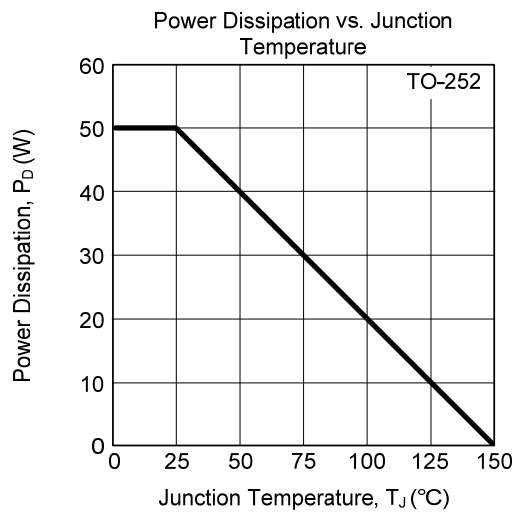
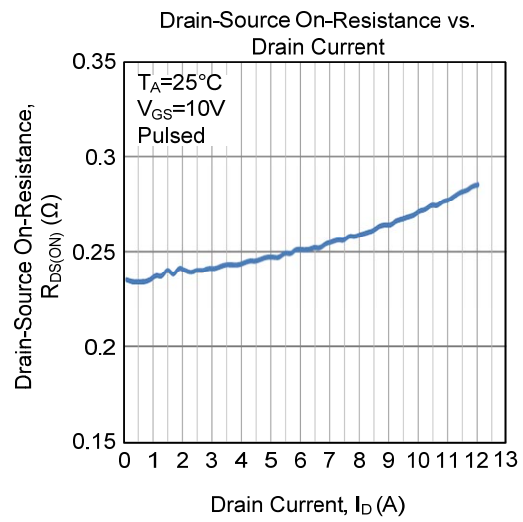
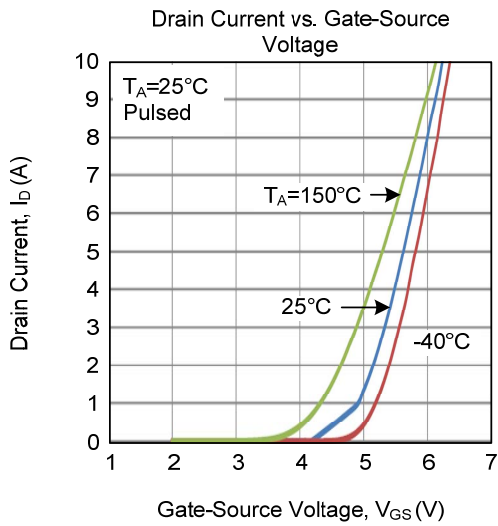
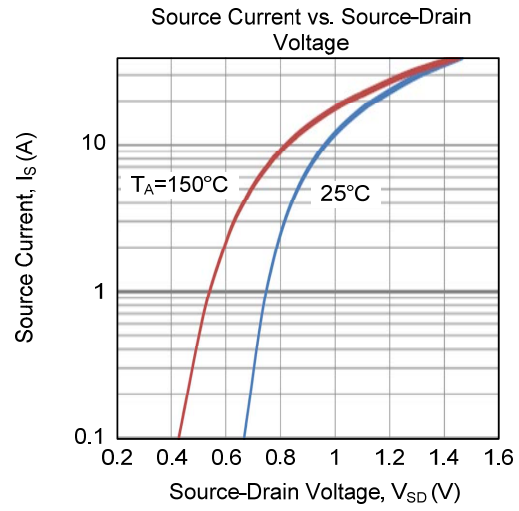
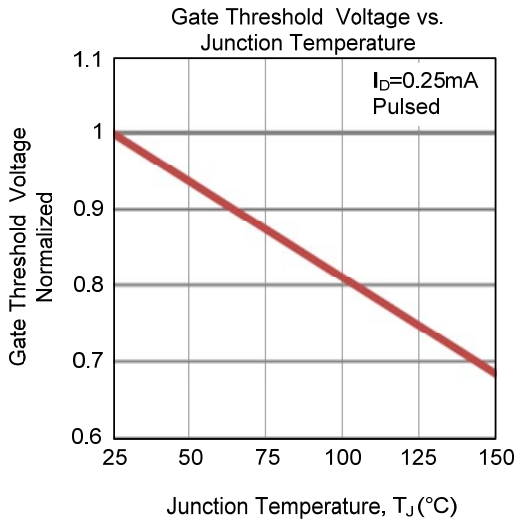


Unclamped Inductive Switching Waveforms

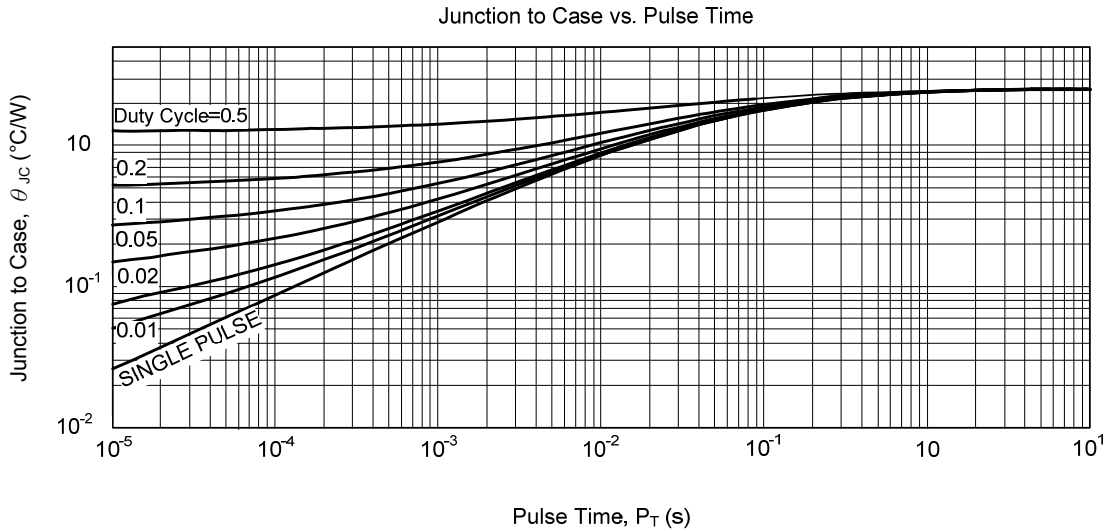
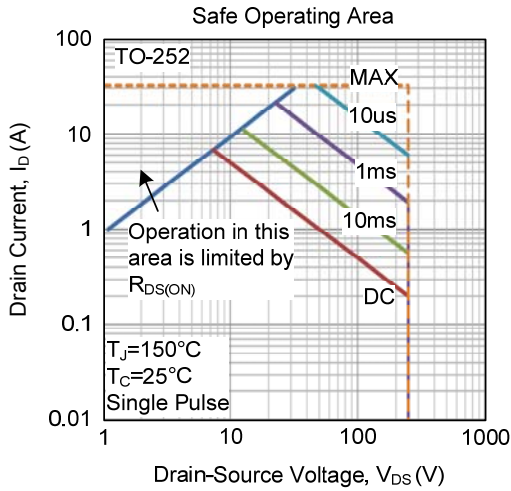
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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