



# UF634

**Power MOSFET**

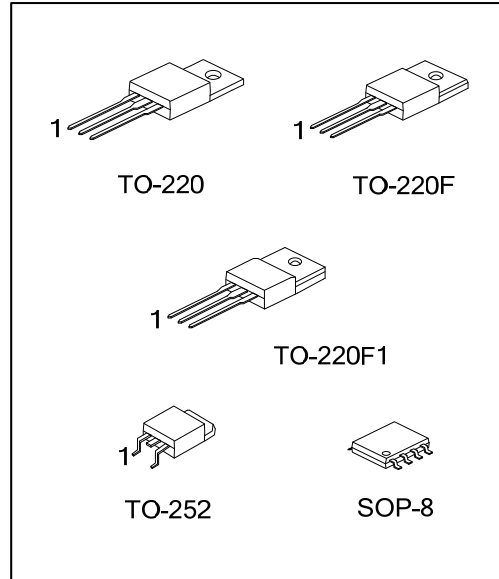
## ADVANCED POWER MOSFET

### DESCRIPTION

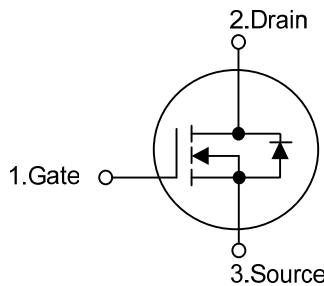
The UTC **UF634** is a N-channel Power MOSFET and it uses UTC advanced technology to provide customers with lower  $R_{DS(ON)}$ , improved gate charge and so on.

### FEATURES

- \*  $R_{DS(ON)} < 0.45\Omega$  @  $V_{GS}=10V, I_D=8.1A$
- \* 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



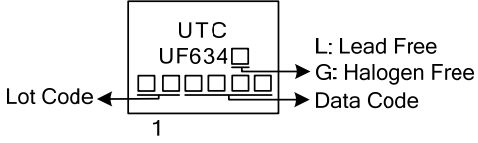
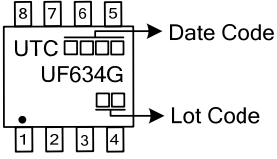
### ORDERING INFORMATION

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-TN3-R	UF634G-TN3-R	TO-252	G	D	S	-	-	-	-	-	-	Tape Reel
-	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>UF634L-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 TN3: TO-252, S08: SOP-8</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ MARKING

TO-220 / TO-220F / TO-220F1 TO-220F2 / TO-252 / TO-262	SOP-8
 <p>UTC UF634</p> <p>Lot Code ←</p> <p>1</p> <p>→ Data Code</p> <p>→ L: Lead Free</p> <p>→ G: Halogen Free</p>	 <p>8 7 6 5 → Date Code</p> <p>UTC</p> <p>UF634G</p> <p>→ 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		$V_{GS}$	$\pm 30$	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-252		50	W
	SOP-8		5	W
Operating Junction Temperature		$T_J$	+150	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-55~+150	$^{\circ}\text{C}$

Note: 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 RESISTANCE

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F1	$\theta_{JA}$	62.5	$^{\circ}\text{C/W}$
	TO-220F			
	TO-252		110	$^{\circ}\text{C/W}$
	SOP-8		83	$^{\circ}\text{C/W}$
Junction to Case	TO-220	$\theta_{JC}$	1.69	$^{\circ}\text{C/W}$
	TO-220F/TO-220F1		3.29	$^{\circ}\text{C/W}$
	TO-252		2.5	$^{\circ}\text{C/W}$
	SOP-8		24	$^{\circ}\text{C/W}$

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

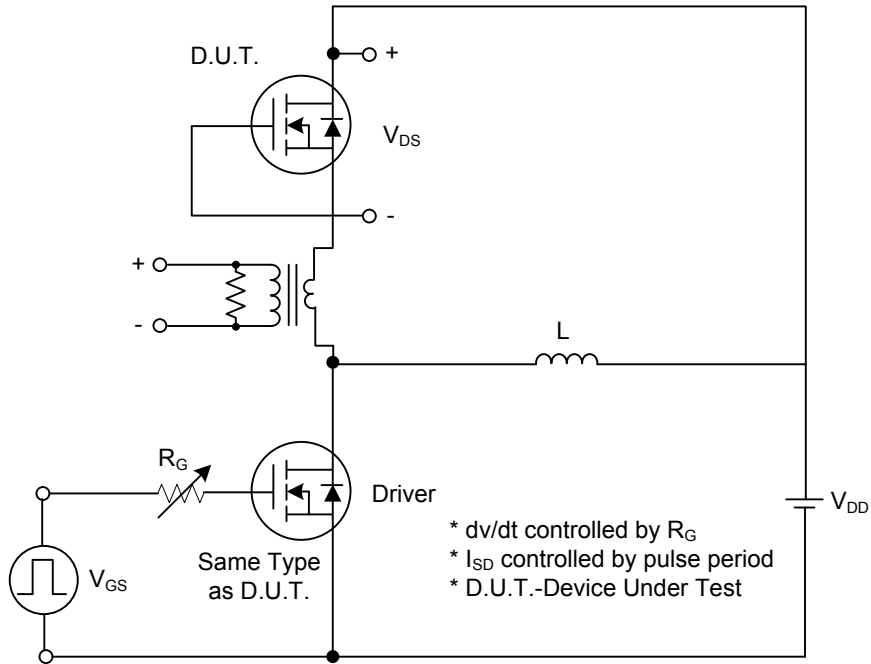
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	250			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=250\text{V}$			10	$\mu\text{A}$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30\text{V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=8.1\text{A}$			0.45	$\Omega$
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		730	950	pF
Output Capacitance	$C_{OSS}$			110	130	pF
Reverse Transfer Capacitance	$C_{RSS}$			50	60	pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}, V_{DS}=200\text{V}, I_D=8.1\text{A}$ (Note 1, 2)		30	40	nC
Gate to Source Charge	$Q_{GS}$			5.8		nC
Gate to Drain Charge	$Q_{GD}$			13.5		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=125\text{V}, I_D=8.1\text{A}, R_G=12\Omega$ (Note 1, 2)		13	40	ns
Rise Time	$t_R$			14	40	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			53	120	ns
Fall-Time	$t_F$			21	50	ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Drain-Source Diode Forward Voltage (Note 2)	$V_{SD}$	$I_S=8.1\text{A}, V_{GS}=0\text{V}, T_J=25^\circ\text{C}$			1.5	V
Maximum Body-Diode Continuous Current	$I_S$				8.1	A
Pulsed-Source Current (Note 1)	$I_{SM}$				32.4	A

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

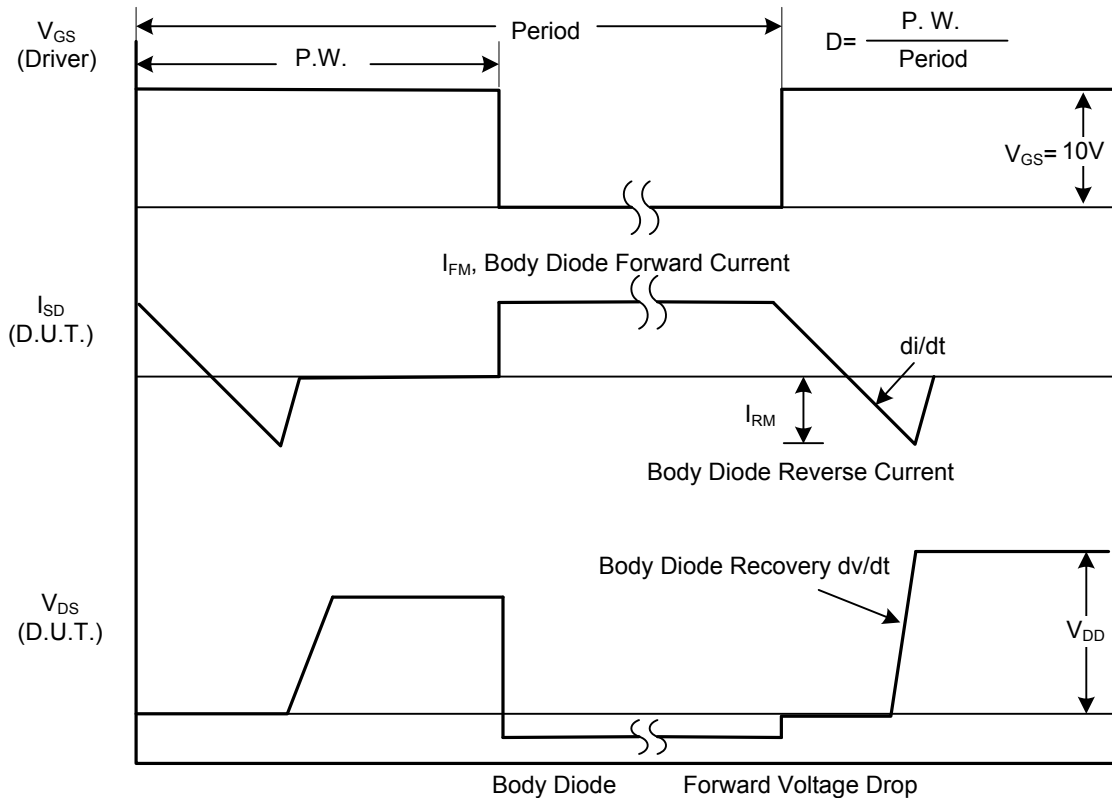
2. Pulse Test: Pulse Width =  $250\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

3. Essentially Independent of Operating Temperature.

■ TEST CIRCUITS AND WAVEFORMS

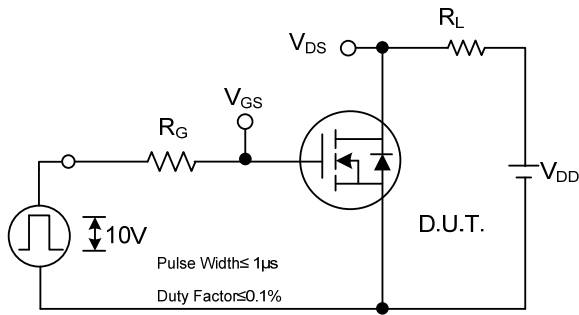


Peak Diode Recovery  $dv/dt$  Test Circuit

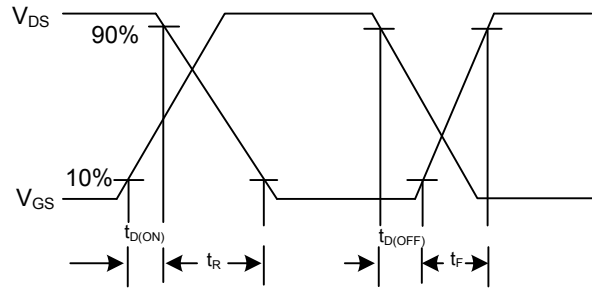


Peak Diode Recovery  $dv/dt$  Waveforms

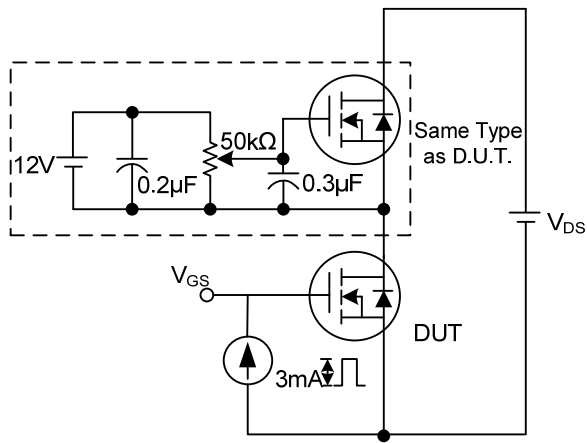
■ TEST CIRCUITS AND WAVEFORMS (Cont.)



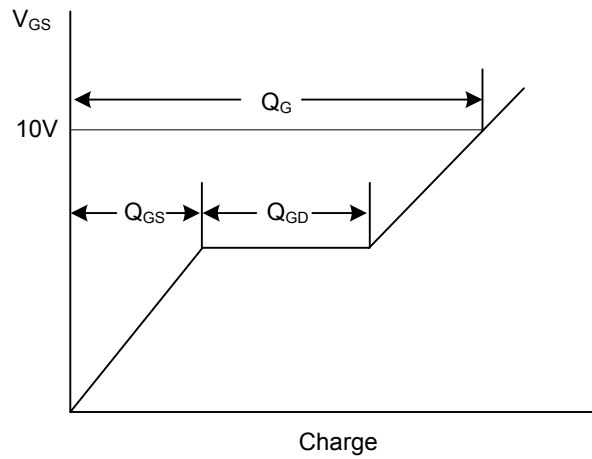
Switching Test Circuit



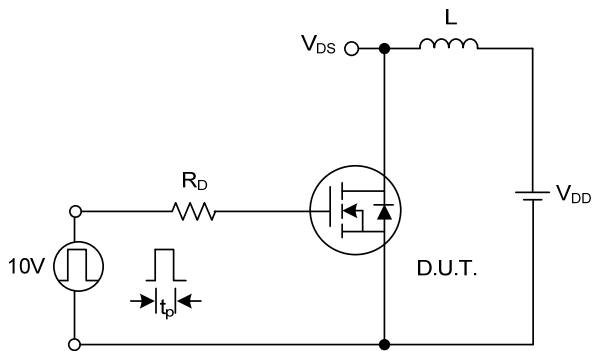
Switching Waveforms



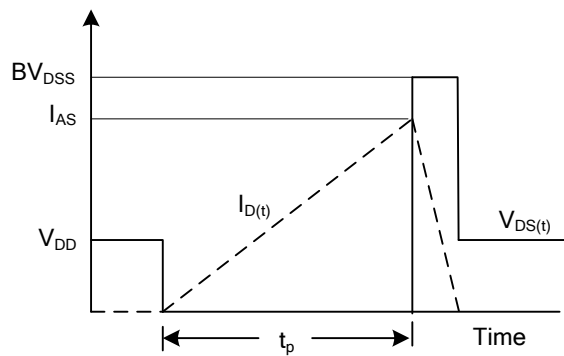
Gate Charge Test Circuit



Gate Charge Waveform

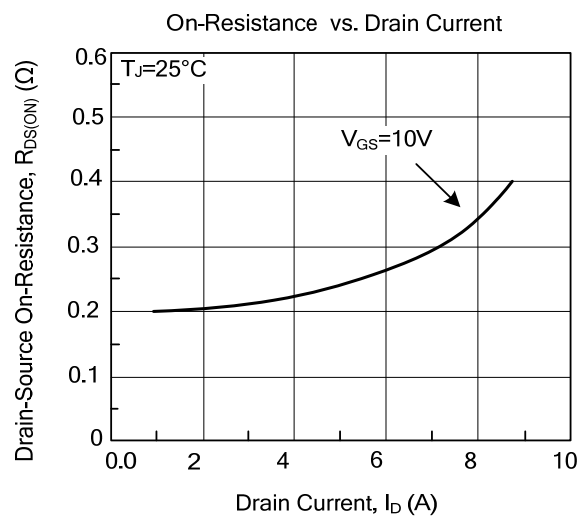
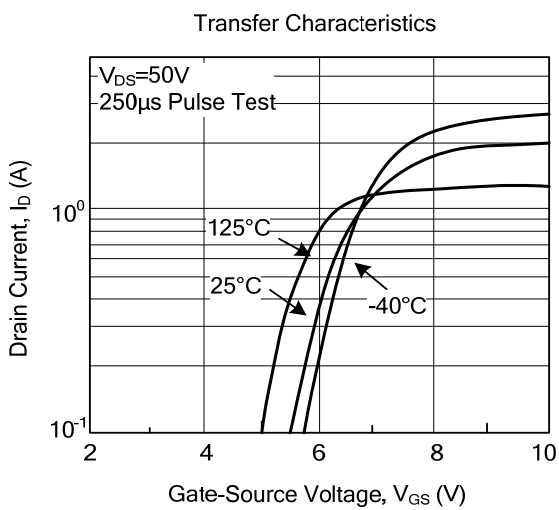
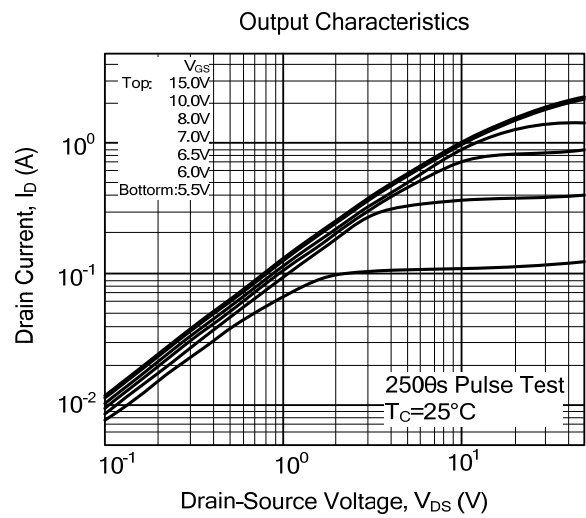
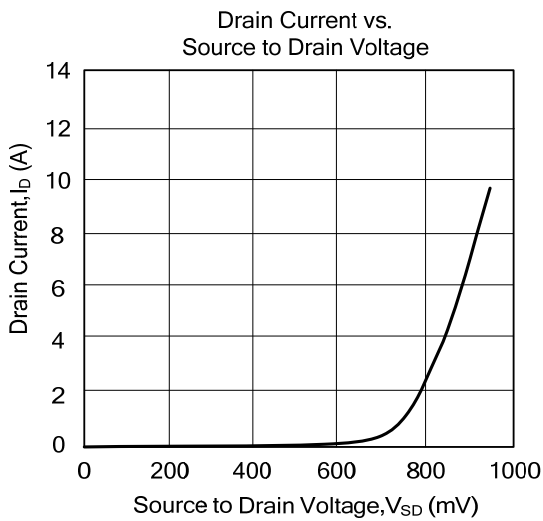
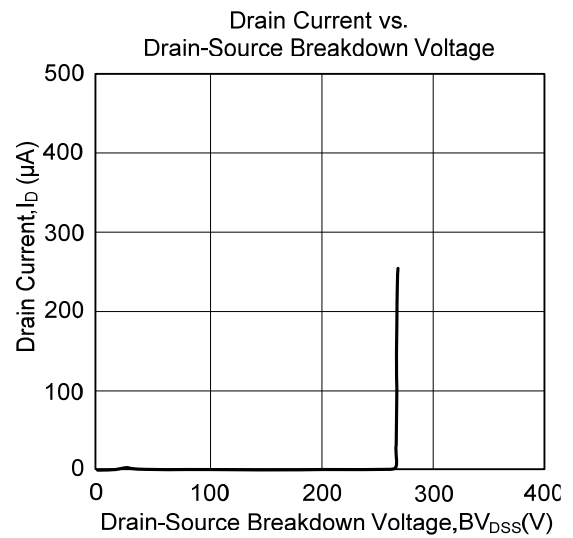
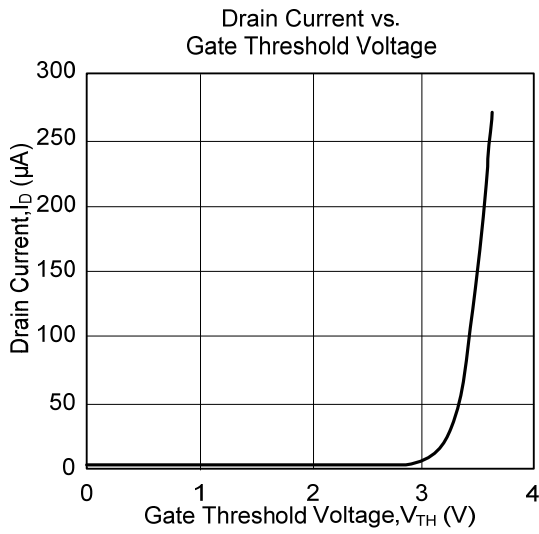


Unclamped Inductive Switching Test Circuit

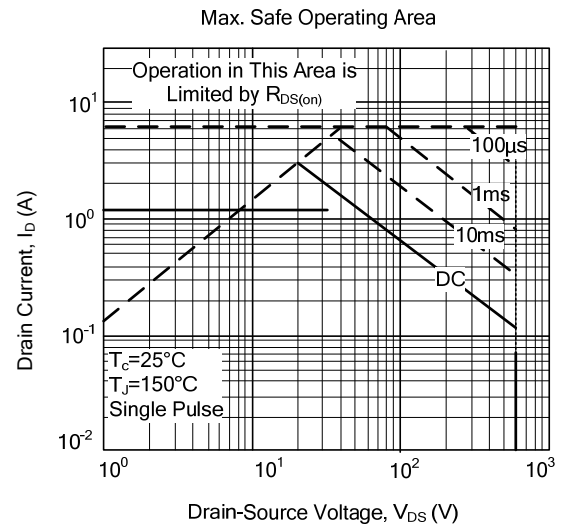
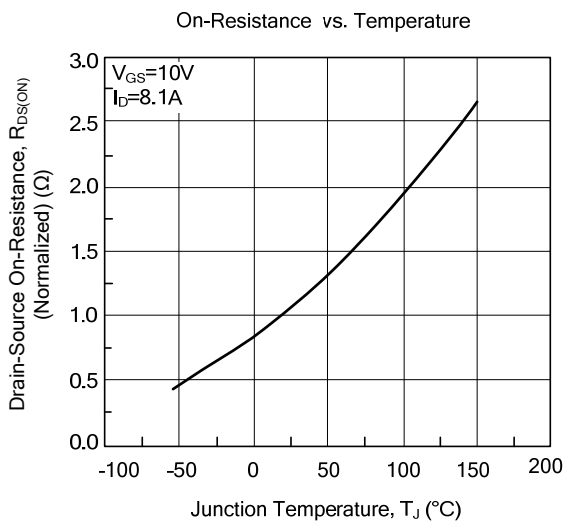
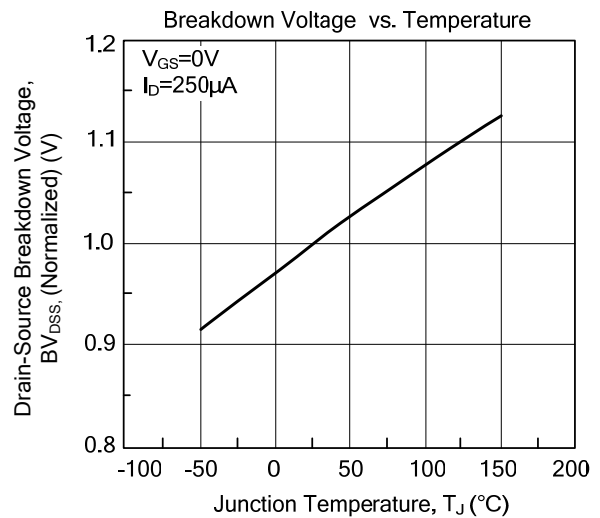
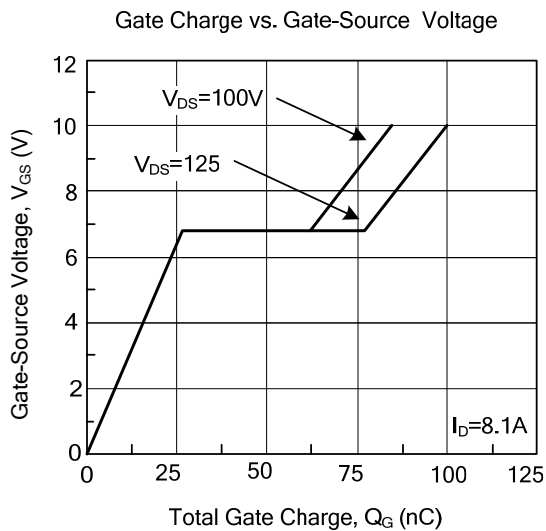
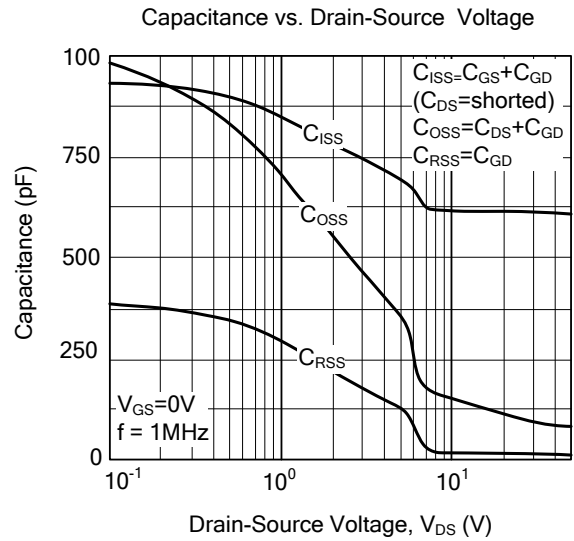
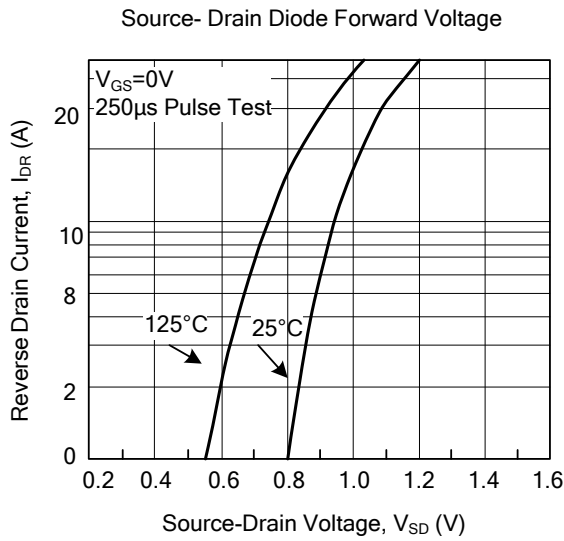


Unclamped Inductive Switching Waveforms

## TYPICAL CHARACTERISTICS

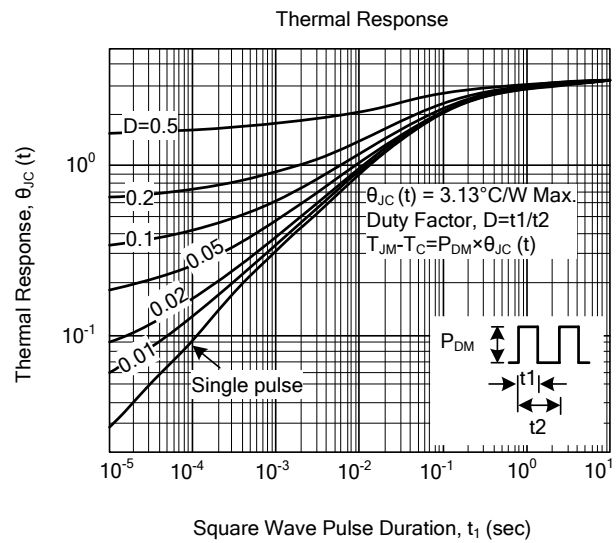
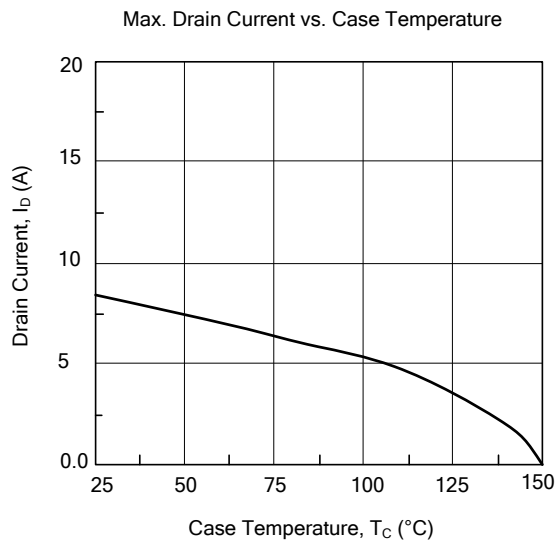


## TYPICAL CHARACTERISTICS(Cont.)





■ TYPICAL CHARACTERISTICS(Cont.)



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