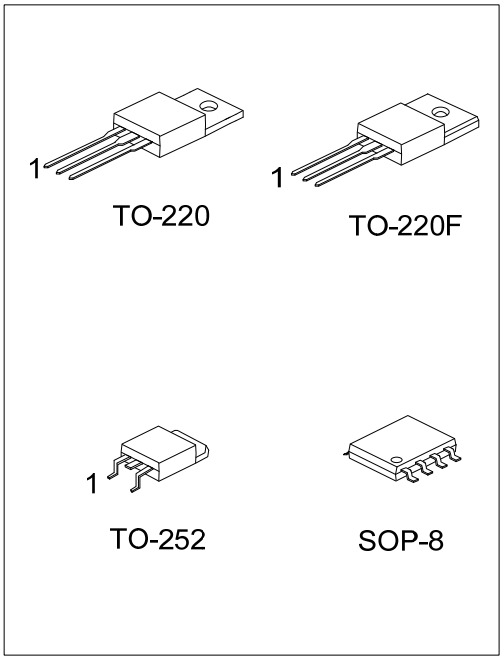
UF634-HC

Power MOSFET

ADVANCED POWER MOSFET



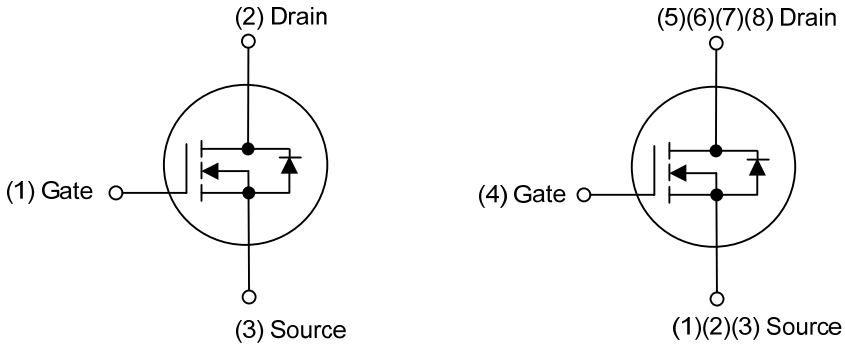
■ DESCRIPTION

The UTC **UF634-HC** 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=4.0A
* Lower Input Capacitance
* Improved Gate Charge
* Lower Leakage Current: 10μA (MAX.) @ V_{DS} = 250V
* Avalanche Rugged Technology
* Rugged Gate Oxide Technology
* Extended Safe Operating Area

■ SYMBOL

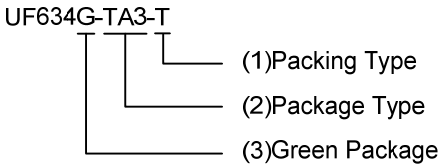


TO-220/TO-220F/TO-252 SOP-8

■ ORDERING INFORMATION

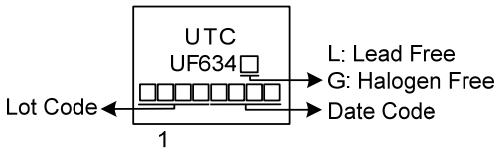
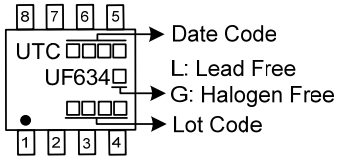
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UF634L-TA3-T	UF634G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UF634L-TF3-T	UF634G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UF634L-TN3-R	UF634G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UF634L-S08-R	UF634G-S08-R	SOP-8	S	S	S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

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



(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TF3: TO-220F, TN3: TO-252
S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

TO-220 / TO-220F / TO-252	SOP-8
	

■ ABSOLUTE MAXIMUM RATINGS (T_C=25°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		I_D	8.1	A
Drain Current-Pulsed (Note 2)		I_{DM}	32.4	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	217	mJ
Power Dissipation	TO-220	P_D	70	W
	TO-220F		38	W
	TO-252		50	W
	SOP-8		5	W
Operating 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=30mH, I_{AS}=3.8A, V_{DD}=50V, R_G=27Ω, Starting T_J =25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-220 TO-220F	θ_{JA}	62.5	°C/W
	TO-252		110	°C/W
	SOP-8		90	°C/W
Junction to Case	TO-220	θ_{JC}	1.01	°C/W
	TO-220F		3.2	°C/W
	TO-252		2.5 (Note)	°C/W
	SOP-8		24 (Note)	°C/W

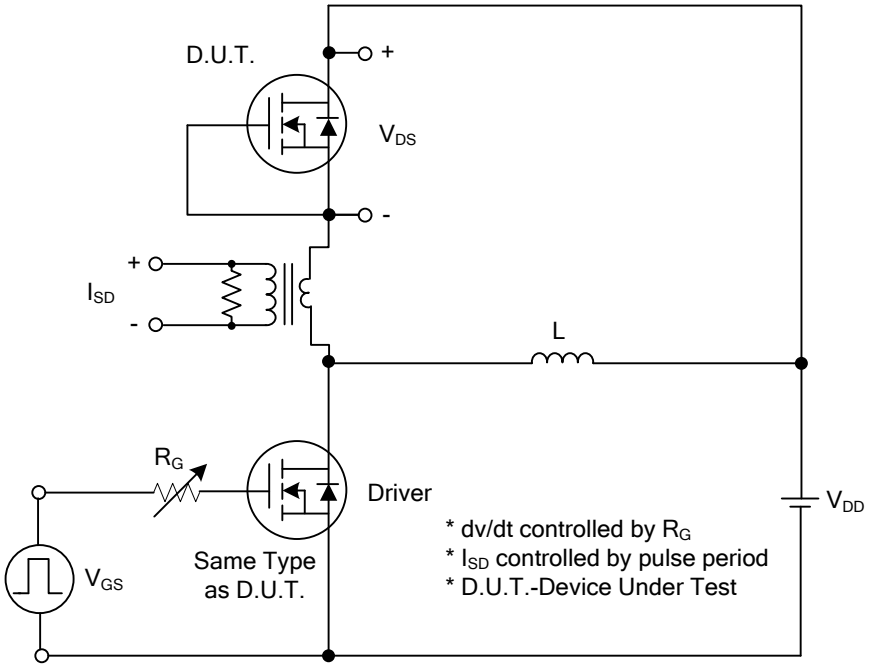
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

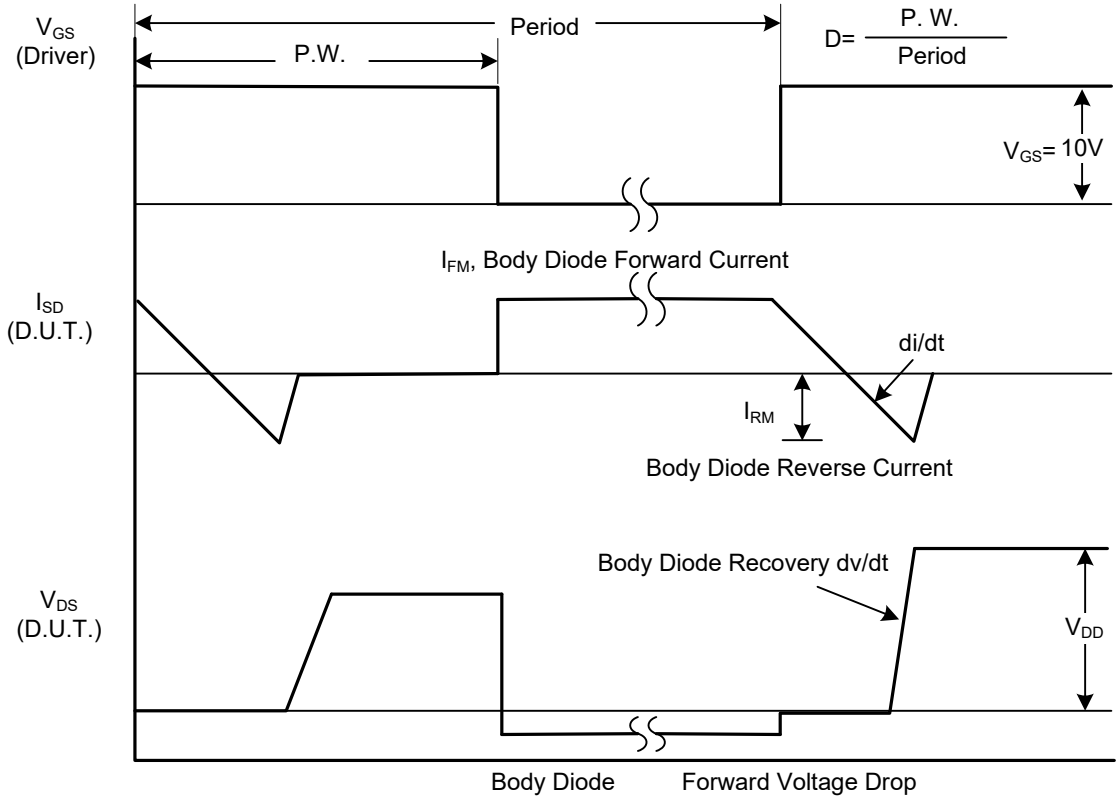
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	250			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=250V			10	μA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±30V			±100	nA
ON CHARACTERISTICS						
Gate Threshold 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=4.0A			0.45	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		435		pF
Output Capacitance	C_{OSS}			72		pF
Reverse Transfer Capacitance	C_{RSS}			5		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{GS}=10V, V_{DS}=200V, I_D=8.1A (Note 1, 2)		10		nC
Gate to Source Charge	Q_{GS}			3		nC
Gate to Drain Charge	Q_{GD}			1.8		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=100V, I_D=8.1A, R_G=25Ω (Note 1, 2)		7		ns
Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			26		ns
Fall-Time	t_F			19		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 =6.0A, V_{GS}=0V, dI_F/dt=100A/μs		115		ns
Reverse Recovery Charge	Q_{rr}			1.05		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

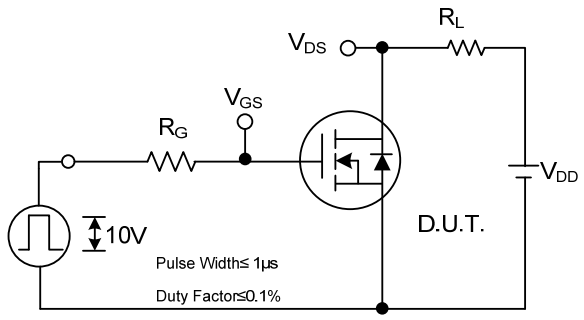


Peak Diode Recovery dv/dt Test Circuit

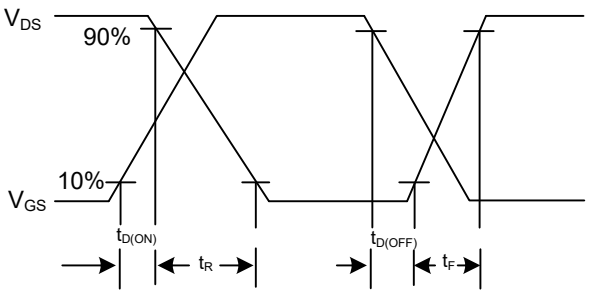


Peak Diode Recovery dv/dt Waveforms

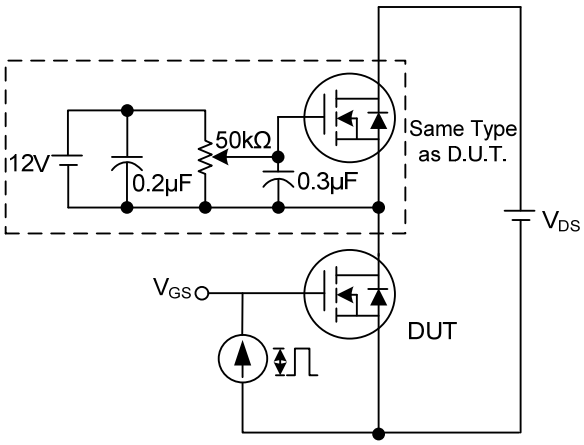
■ TEST CIRCUITS AND WAVEFORMS



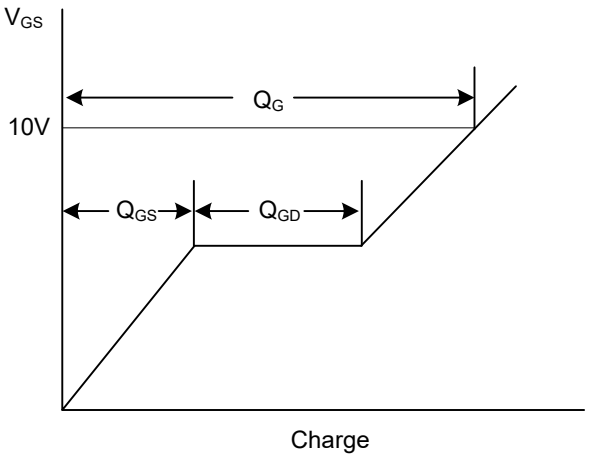
Switching Test Circuit



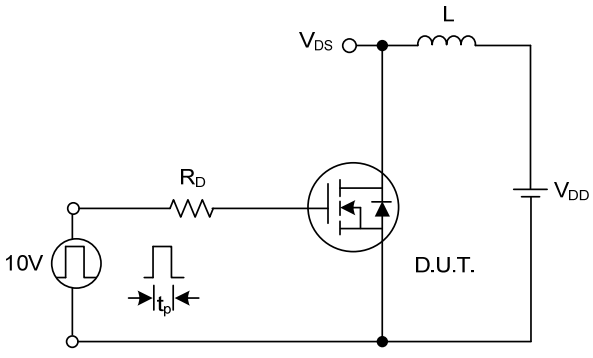
Switching Waveforms



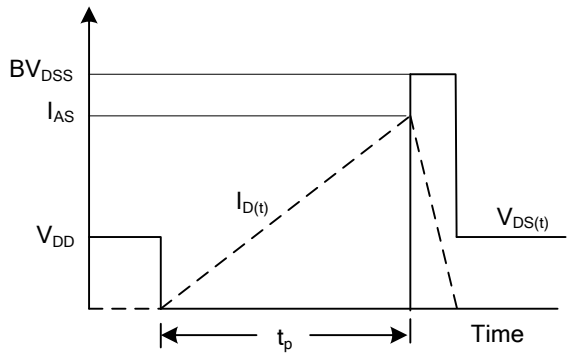
Gate Charge Test Circuit



Gate Charge Waveform



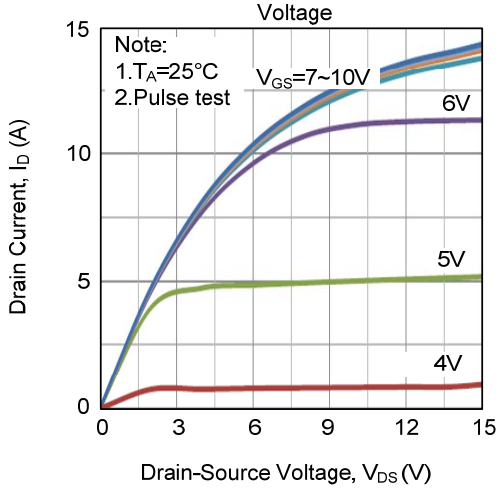
Unclamped Inductive Switching Test Circuit



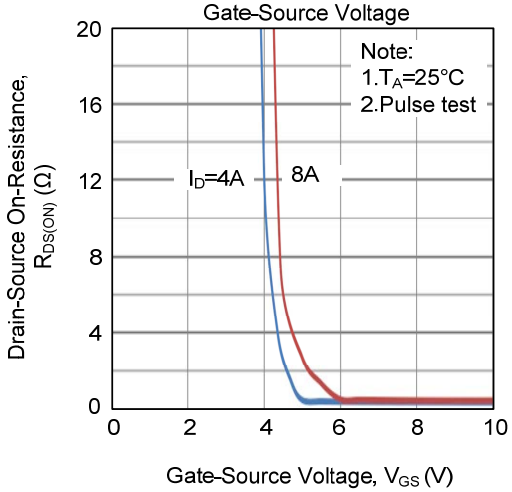
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

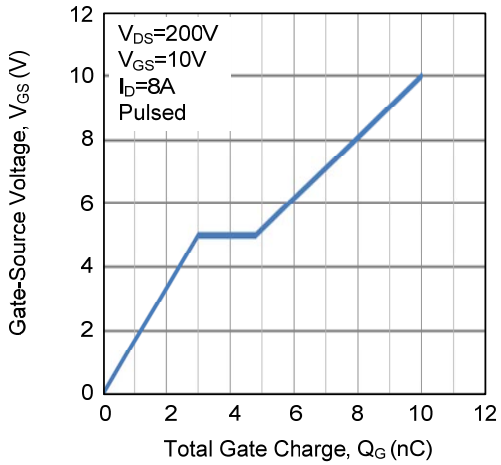
Drain Current vs. Drain-Source Voltage



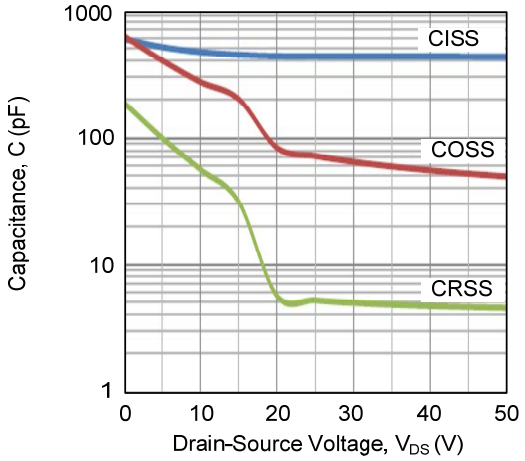
Drain-Source On-Resistance vs. Gate-Source Voltage



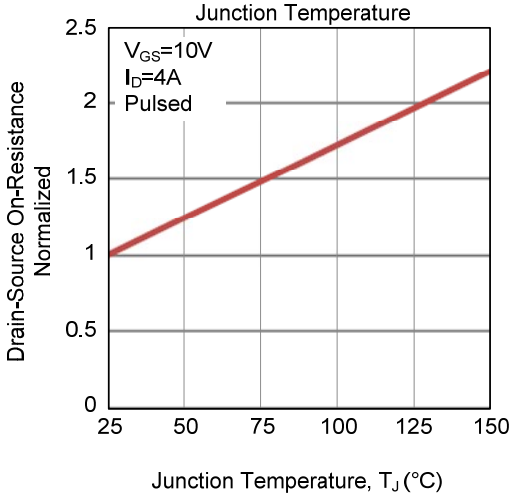
Gate Charge Characteristics



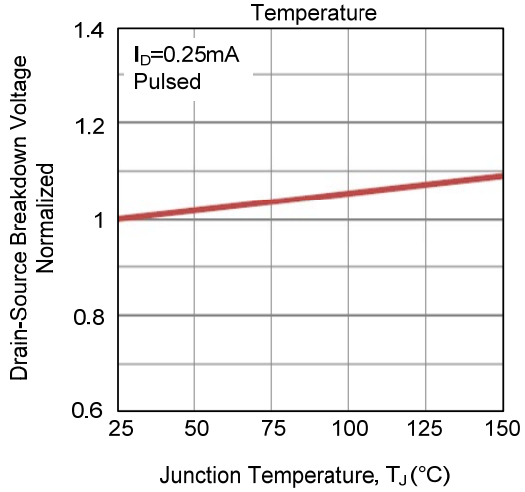
Capacitance Characteristics



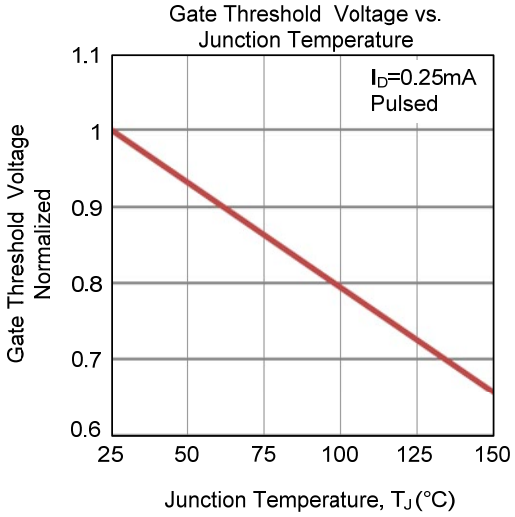
Drain-Source On-Resistance vs. Junction Temperature

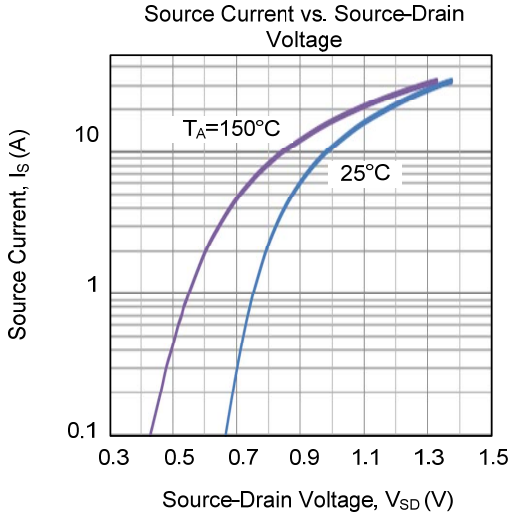


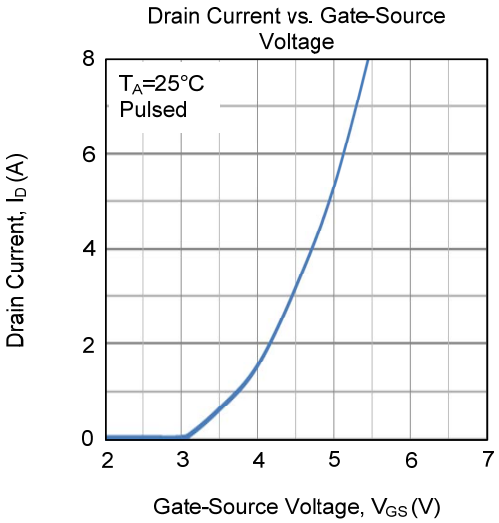
Breakdown Voltage vs. Junction Temperature

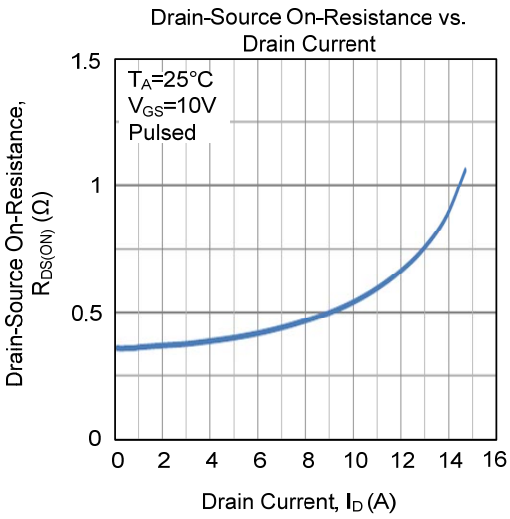


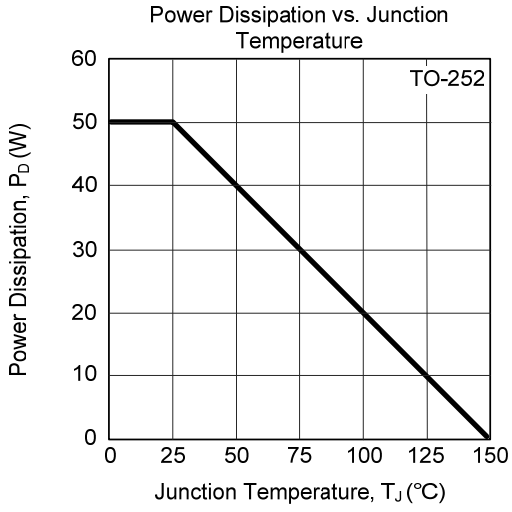
■ TYPICAL CHARACTERISTICS (Cont.)

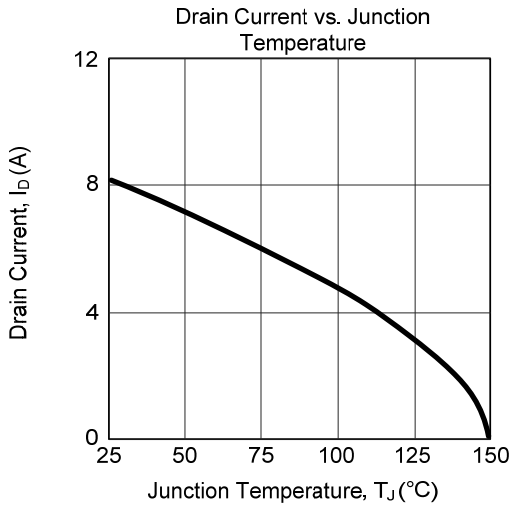












■ TYPICAL CHARACTERISTICS (Cont.)