

**UTT30P06****Power MOSFET****-60V, -30A P-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UTT30P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance. It can also withstand high energy in the avalanche.

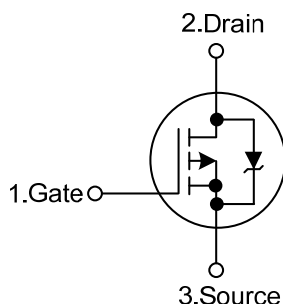
The UTC **UTT30P06** is suitable for low voltage and high speed switching applications

FEATURES

* $R_{DS(ON)} \leq 60 \text{ m}\Omega$ @ $V_{GS} = -10\text{V}$, $I_D = -15\text{A}$

$R_{DS(ON)} \leq 85 \text{ m}\Omega$ @ $V_{GS} = -4.5\text{V}$, $I_D = -15\text{A}$

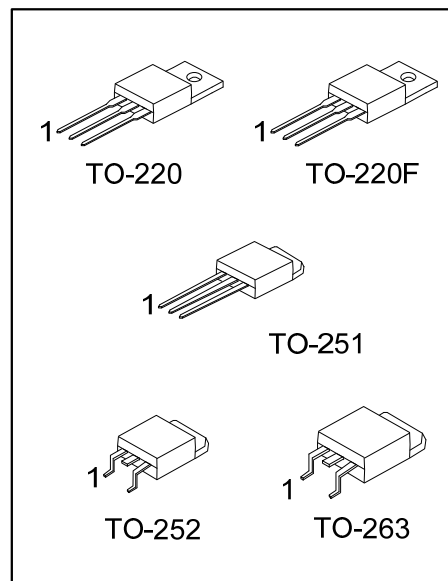
* High Switching Speed

SYMBOL**ORDERING INFORMATION**

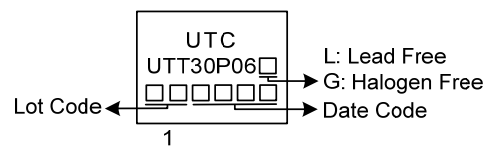
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT30P06L-TA3-T	UTT30P06G-TA3-T	TO-220	G	D	S	Tube
UTT30P06L-TF3-T	UTT30P06G-TF3-T	TO-220F	G	D	S	Tube
UTT30P06L-TM3-T	UTT30P06G-TM3-T	TO-251	G	D	S	Tube
UTT30P06L-TN3-R	UTT30P06G-TN3-R	TO-252	G	D	S	Tape Reel
UTT30P06L-TQ2-T	UTT30P06G-TQ2-T	TO-263	G	D	S	Tube
UTT30P06L-TQ2-R	UTT30P06G-TQ2-R	TO-263	G	D	S	Tape Reel

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

UTT30P06G-TA3-T (1) Packing Type (2) Package Type (3) Green Package		(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF3: TO-220F, TM3: TO-251, TN3: TO-252, TQ2: TO-263 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	-60	V
Drain-Gate Voltage (R _{GS} =1.0 MΩ)		V _{DGR}	-60	V
Gate-Source Voltage	Continuous	V _{GSS}	±15	V
Drain Current	Continuous T _C =25°C	I _D	-30	A
	Pulsed (t _p ≤10μs)	I _{DM}	-50	A
Power Dissipation	TO-220/TO-263	P _D	89	W
	TO-220F		38	W
	TO-251/TO-252		44	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. When surface mounted to an FR4 board using the minimum recommended pad size.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F	θ _{JA}	62.5	°C/W
	TO-263			
	TO-251/TO-252		110	°C/W
Junction to Case	TO-220/TO-263	θ _{JC}	1.4	°C/W
	TO-220F		3.28	°C/W
	TO-251/TO-252		2.84	°C/W

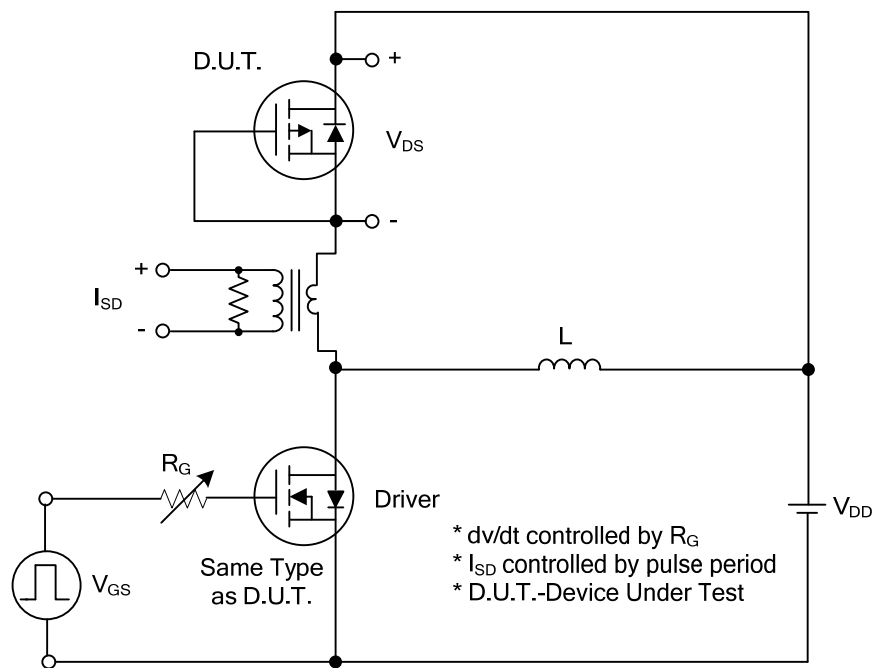
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =-0.25mA, V _{GS} =0V	-60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-10	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+15V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-15V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS (Note 1)							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.1		-2.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =-10V, I _D =-15A			60	mΩ
			V _{GS} =-4.5V, I _D =-15A			85	mΩ
Drain-Source On-Voltage		V _{DS(ON)}	V _{GS} =-10V, I _D =-30A			-2.9	V
			V _{GS} =-10V, I _D =-15A, T _J =150°C			-2.8	V
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		1478		pF
Output Capacitance		C _{OSS}			120		pF
Reverse Transfer Capacitance		C _{RSS}			108		pF
SWITCHING PARAMETERS (Note 2)							
Total Gate Charge		Q _G	V _{GS} =-10V, V _{DS} =-48V, I _D =-30A I _G =1mA		40		nC
Gate-Source Charge		Q _{GS}			3.6		nC
Gate-Drain Charge		Q _{GD}			9.6		nC
Turn-ON Delay Time		t _{D(ON)}	V _{GS} =-10V, V _{DD} =-30V, I _D =-1A, R _G =9.1Ω		5.6		ns
Rise Time		t _r			17		ns
Turn-OFF Delay Time		t _{D(OFF)}			64		ns
Fall-Time		t _f			38		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				-30	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				-50	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =-30A, V _{GS} =0V			-3.0	V
Body Diode Reverse Recovery Time		t _{rr}	I _S =-30A, V _{GS} =0V,		175		ns
Body Diode Reverse Recovery Charge		Q _{rr}	dl _S /dt=-100A/μs		0.69		μC

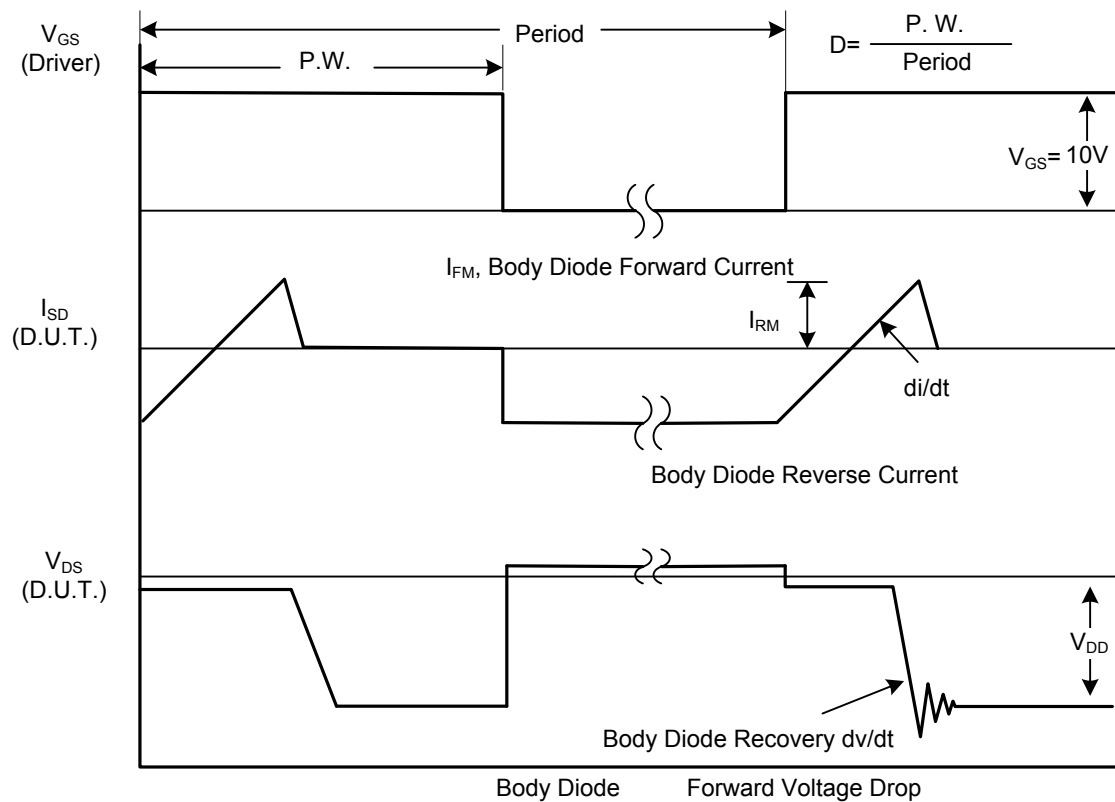
Notes: 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

2. Switching characteristics are independent of operating junction temperature.

■ TEST CIRCUITS AND WAVEFORMS

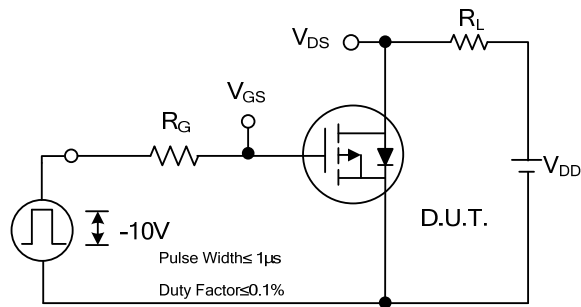


Peak Diode Recovery dv/dt Test Circuit

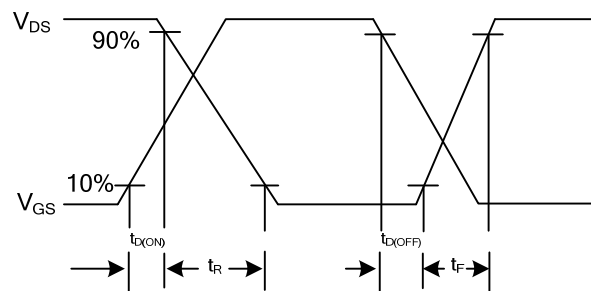


Peak Diode Recovery dv/dt Waveforms

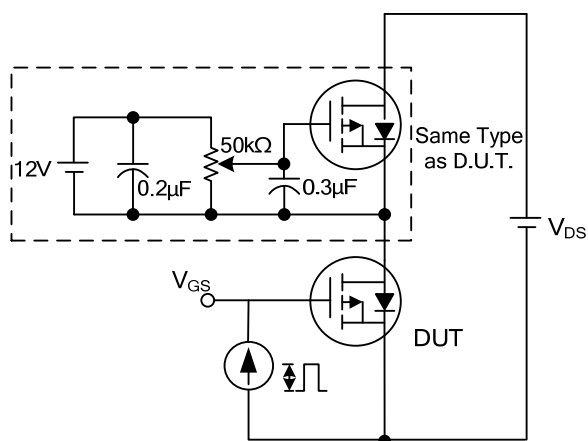
■ TEST CIRCUITS AND WAVEFORMS



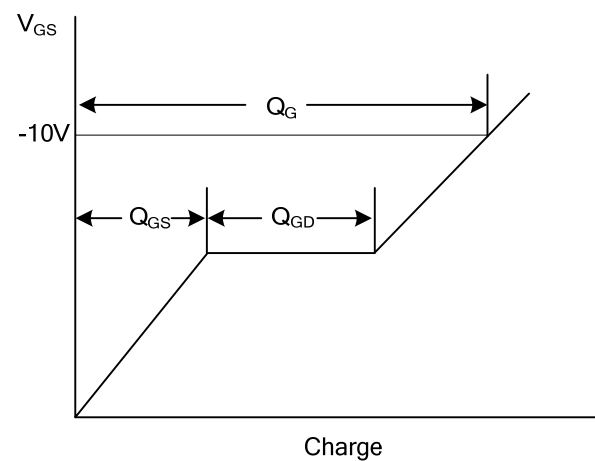
Switching Test Circuit



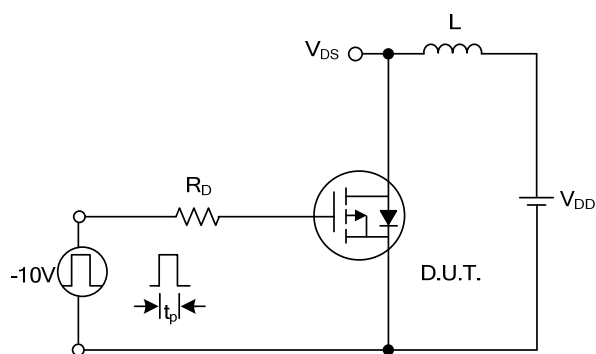
Switching Waveforms



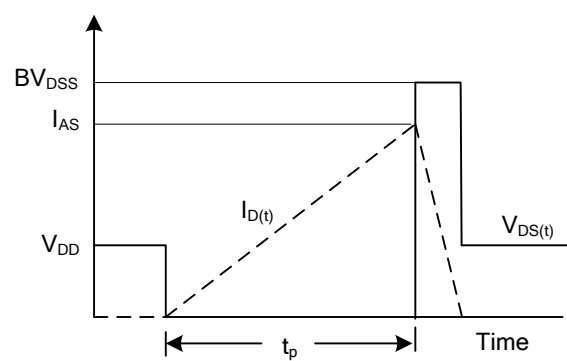
Gate Charge Test Circuit



Gate Charge Waveform

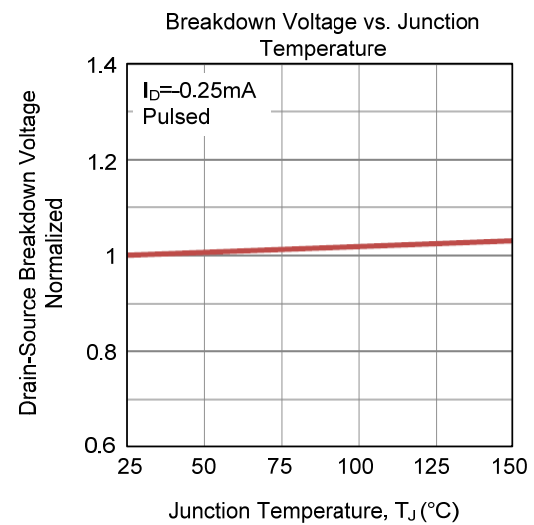
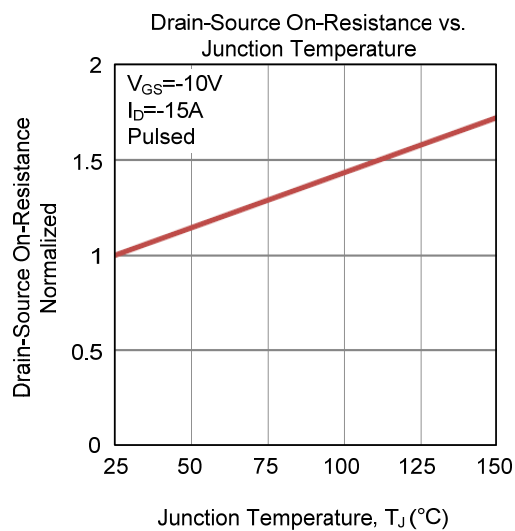
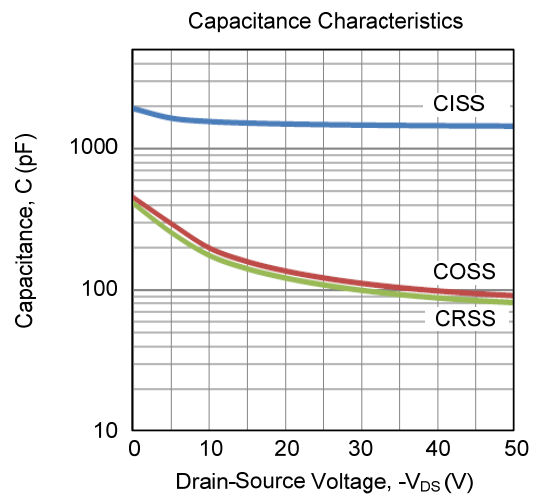
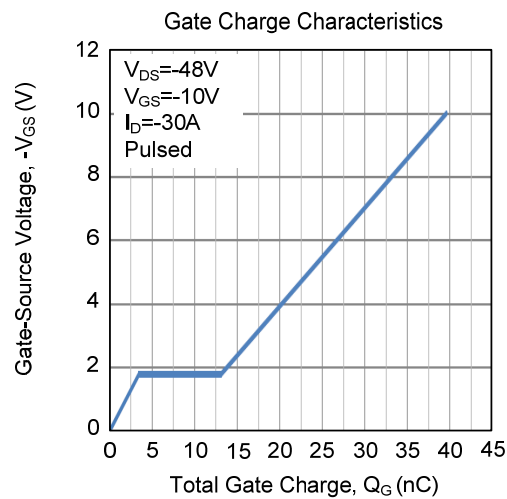
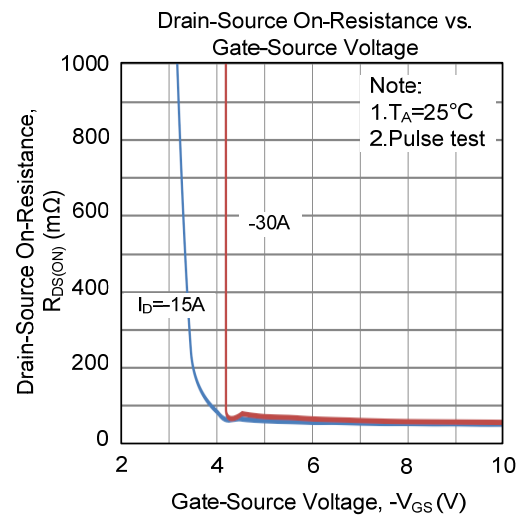
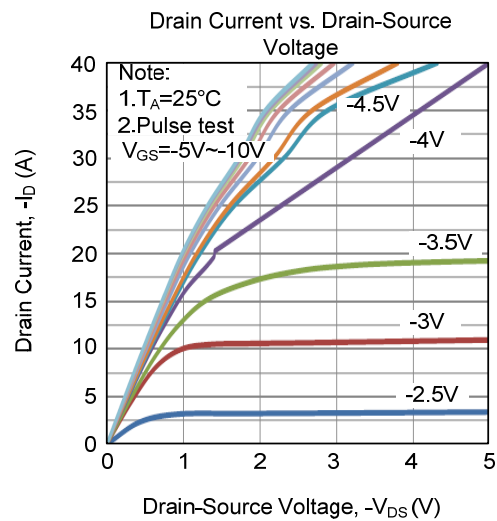


Unclamped Inductive Switching Test Circuit

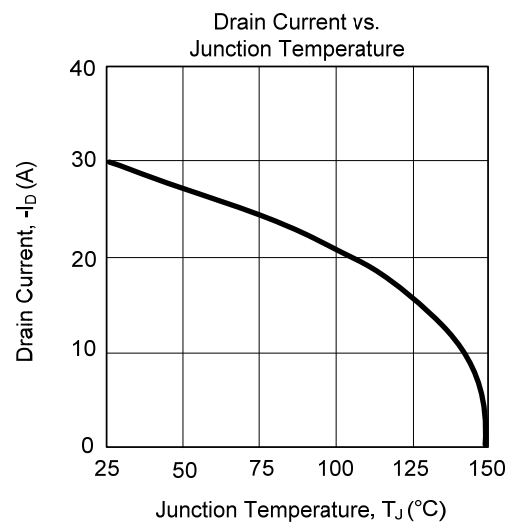
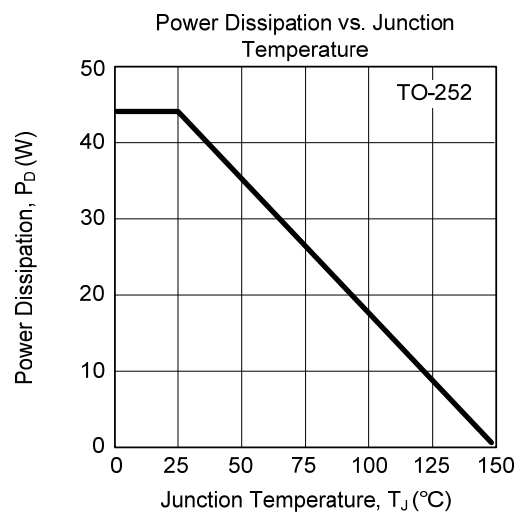
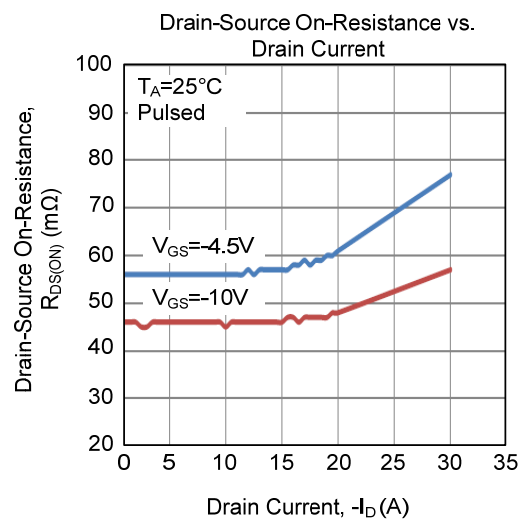
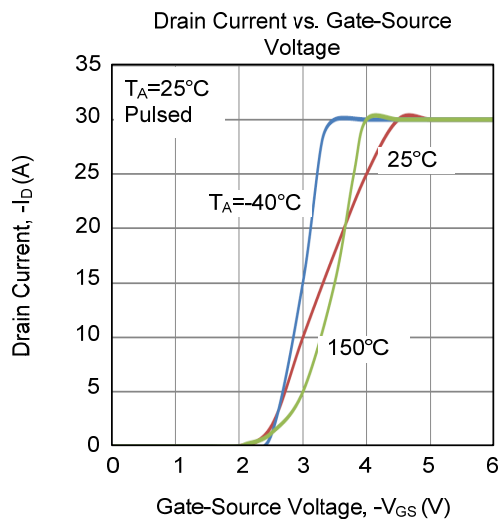
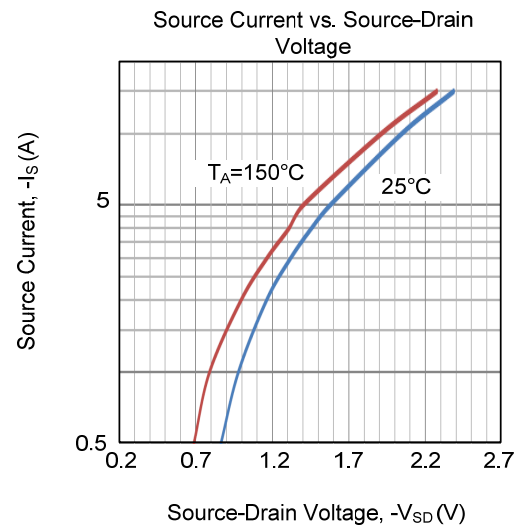
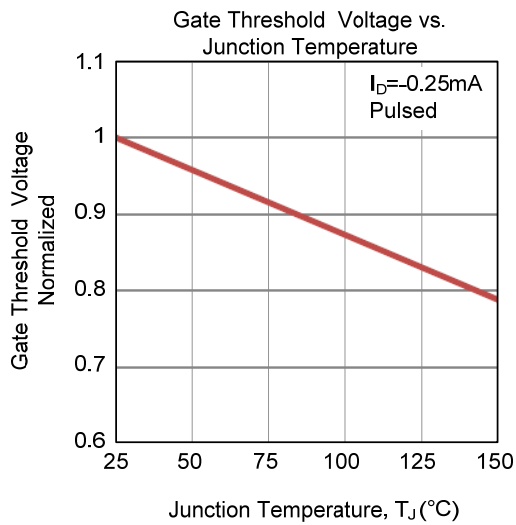


Unclamped Inductive Switching Waveforms

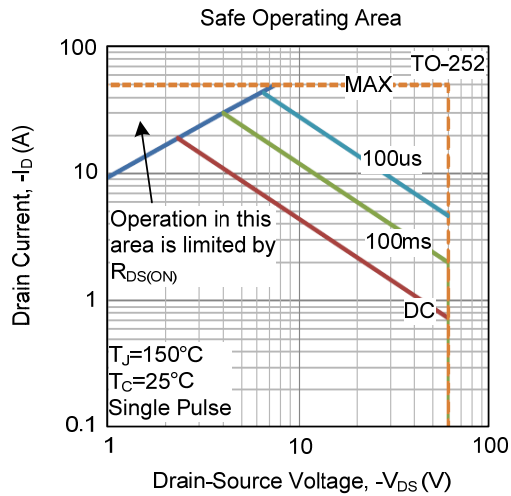
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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