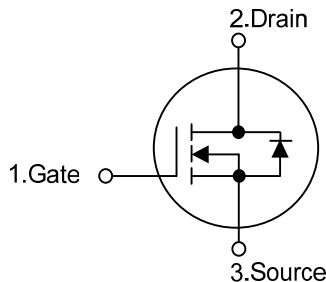


**UTT30N06****Power MOSFET****30A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

The UTC **UTT30N06** is a low voltage power MOSFET and is designed to have better characteristics, such as fast switching time, low gate charge, low on-state resistance and excellent avalanche characteristics. This power MOSFET is usually used in automotive applications of power supplies, high efficient DC to DC converters and battery operated products.

FEATURES

- * $R_{DS(ON)} \leq 38 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=15\text{A}$
- $R_{DS(ON)} \leq 45 \text{ m}\Omega$ @ $V_{GS} = 4.5\text{V}$, $I_D = 15\text{A}$
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability

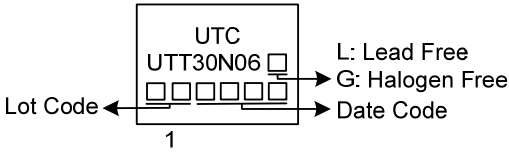
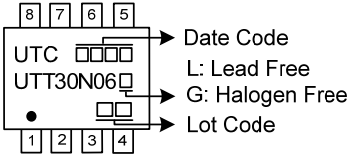
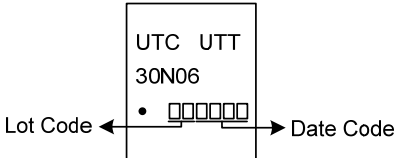
SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT30N06L-TA3-T	UTT30N06G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UTT30N06L-TM3-T	UTT30N06G-TM3-T	TO-251	G	D	S						Tube
UTT30N06L-TN3-R	UTT30N06G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTT30N06L-TND-R	UTT30N06G-TND-R	TO-252D	G	D	S	-	-	-	-	-	Tape Reel
UTT30N06L-S08-R	UTT30N06G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UTT30N06L-K08-5060-R	UTT30N06G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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

UTT30N06G-TA3-T (1)Packing Type (2)Package Type (3)Green Package		(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TM3: TO-251, TN3: TO-252 TND: TO-252D, S08: SOP-8, K08-5060: DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING

PACKAGE	MARKING
TO-220 / TO-251 TO-252 / TO-252D	 UTC UTT30N06 1 Lot Code ← → Date Code L: Lead Free G: Halogen Free
SOP-8	 UTC UTT30N06 1 Date Code L: Lead Free G: Halogen Free Lot Code
DFN5060-8	 UTC UTT 30N06 1 Lot Code ← → Date Code

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	60	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous	I _D	30	A
	Pulsed (Note 2)	I _{DM}	60	A
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	27	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.2	V/ns
Power Dissipation	TO-220	P _D	55	W
	TO-251/TO-252		46	W
	TO-252D			
	SOP-8		1.7	W
			35.7	W
Junction Temperature		T _J	+150	°C
Operation Temperature		T _{OPR}	-55 ~ +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. Repeativity rating: pulse width limited by junction temperature

3. L=0.1mH, I_{AS}=23.4A, V_{DD}=25V, R_G=20Ω, Starting T_J=25°C

4. I_{SD}≤50A, di/dt≤300A/μs, V_{DD}≤BV_{DSS}, Starting T_J=25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ _{JA}	62.5	°C/W
	TO-251/TO-252		50	°C/W
	TO-252D			
	SOP-8		90	°C/W
	DFN5060-8		80	°C/W
Junction to Case	TO-220	θ _{JC}	2.27	°C/W
	TO-251/TO-252		2.7	°C/W
	TO-252D			
	SOP-8		73	°C/W
	DFN5060-8		3.5	°C/W

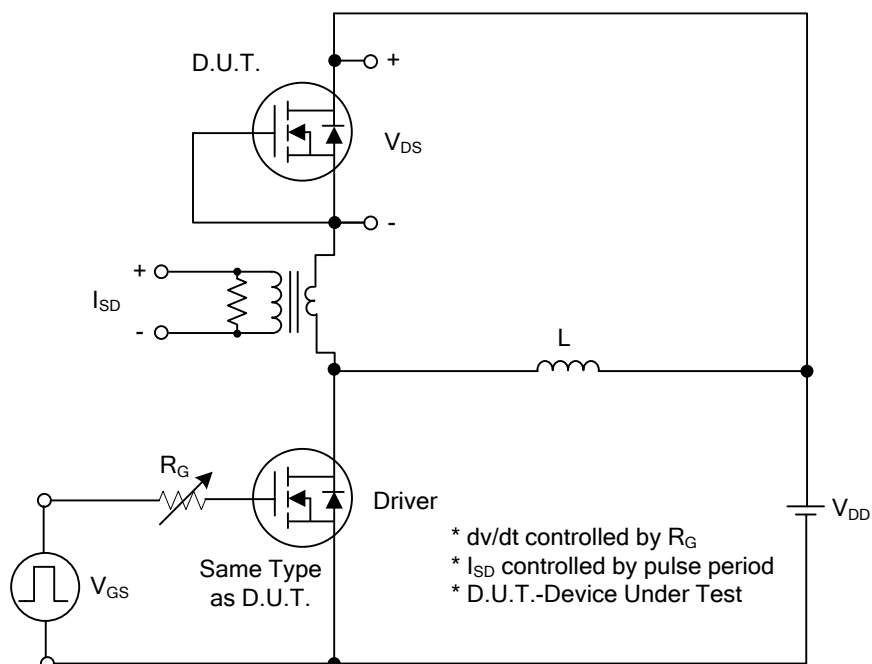
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			10	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} = 20V, V _{DS} = 0 V			100	nA
	Reverse		V _{GS} = -20V, V _{DS} = 0 V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} = 10V, I _D = 15A			38	mΩ
			V _{GS} = 4.5V, I _D = 15A			45	mΩ
DYNAMIC CHARACTERISTICS							
Input Capacitance		C _{ISS}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1MHz		925		pF
Output Capacitance		C _{OSS}			85		pF
Reverse Transfer Capacitance		C _{RSS}			65		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge		Q _G	V _{DS} = 48V, V _{GS} = 10 V, I _D = 30A (Note 1, 2)		22		nC
Gate-Source Charge		Q _{GS}			4		nC
Gate-Drain Charge		Q _{GD}			4.5		nC
Turn-On Delay Time		t _{D(ON)}	V _{DD} = 30V, V _{GS} =10V, I _D =30A, (Note 1, 2)		16		ns
Turn-On Rise Time		t _R			18		ns
Turn-Off Delay Time		t _{D(OFF)}			36		ns
Turn-Off Fall Time		t _F			18		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}				60	A
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} = 0 V, I _S = 30A			1.4	V

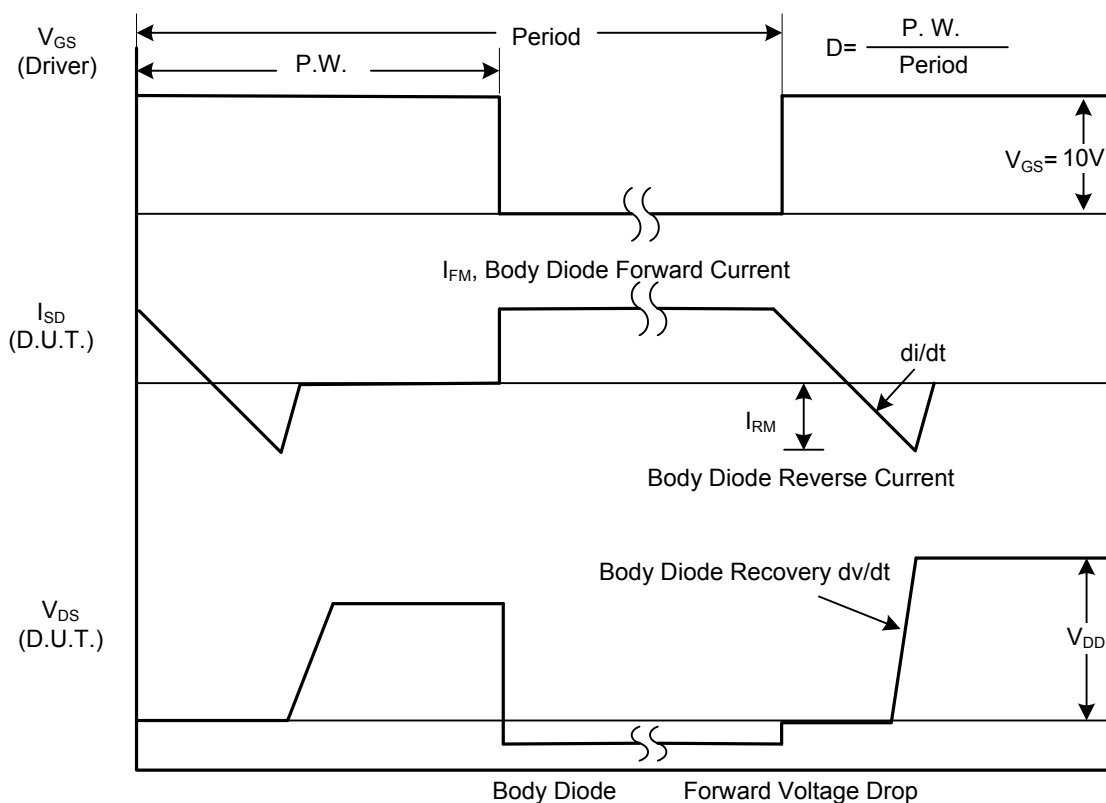
Notes: 1. Pulse Test : Pulse width ≤300μs, Duty cycle ≤ 2%

2. Essentially independent of operating temperature

■ TEST CIRCUITS AND WAVEFORMS

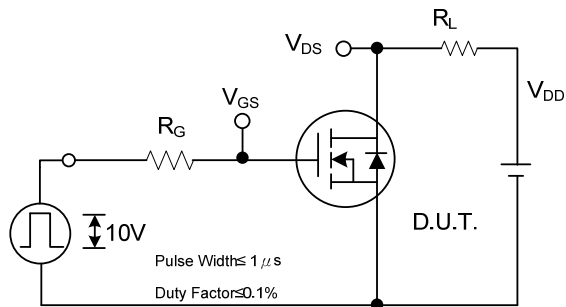


Peak Diode Recovery dv/dt Test Circuit

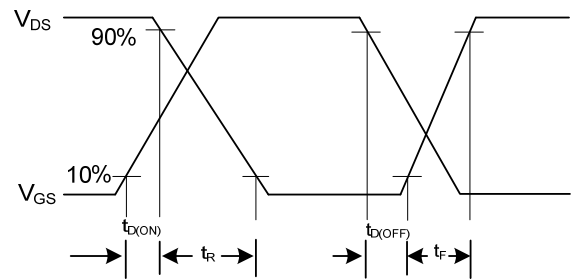


Peak Diode Recovery dv/dt Waveforms

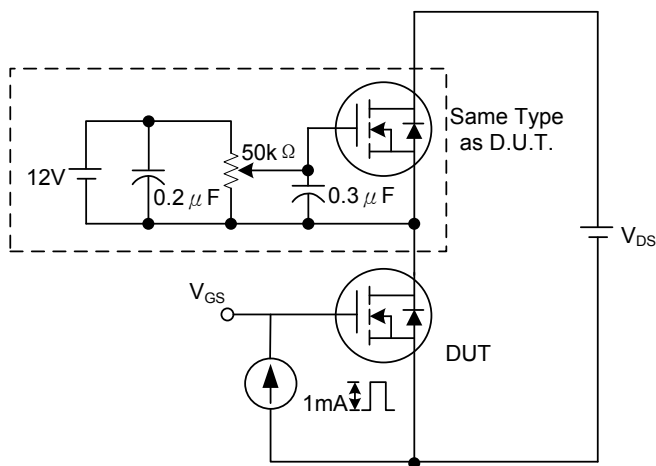
■ TEST CIRCUITS AND WAVEFORMS



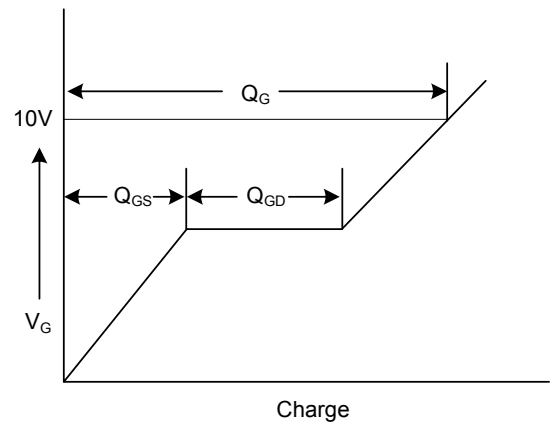
Switching Test Circuit



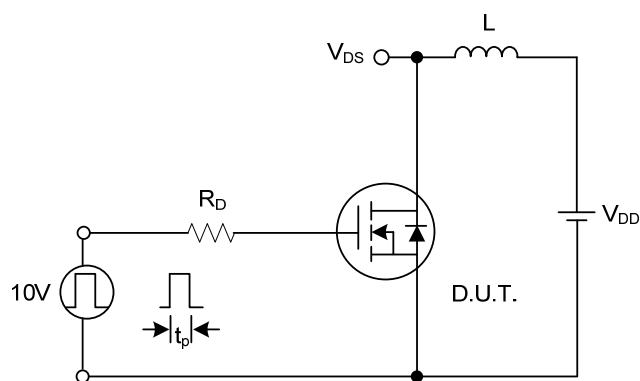
Switching Waveforms



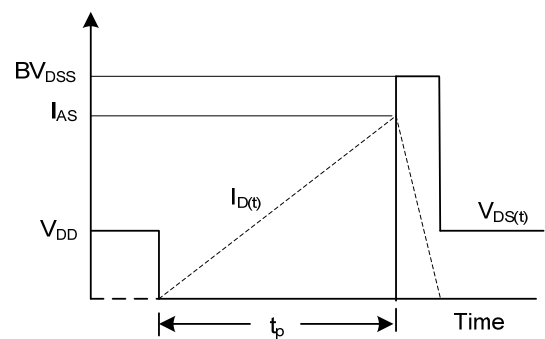
Gate Charge Test Circuit



Gate Charge Waveform

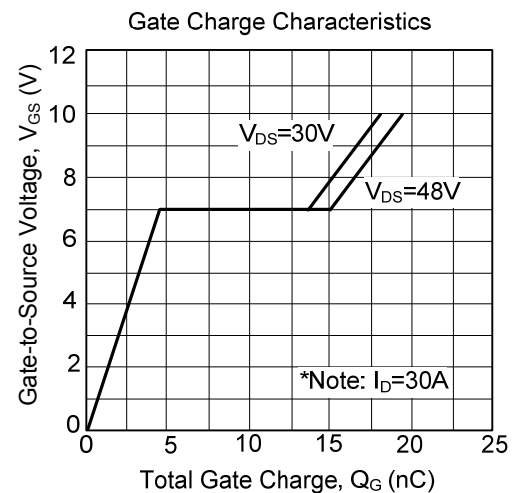
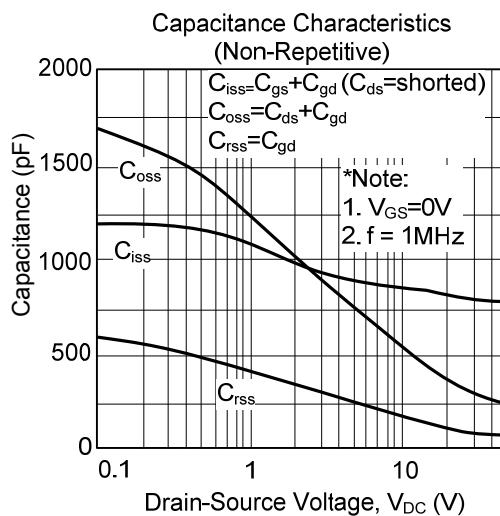
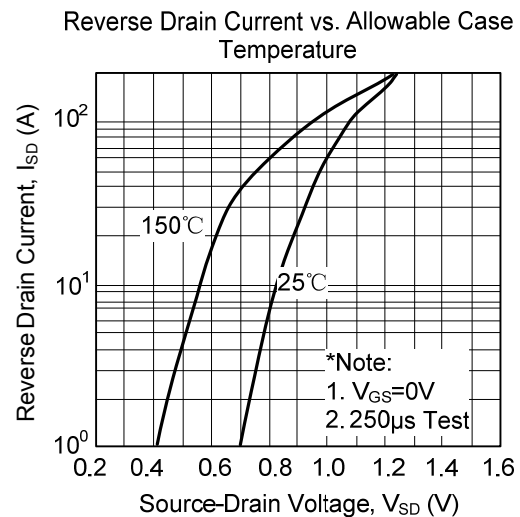
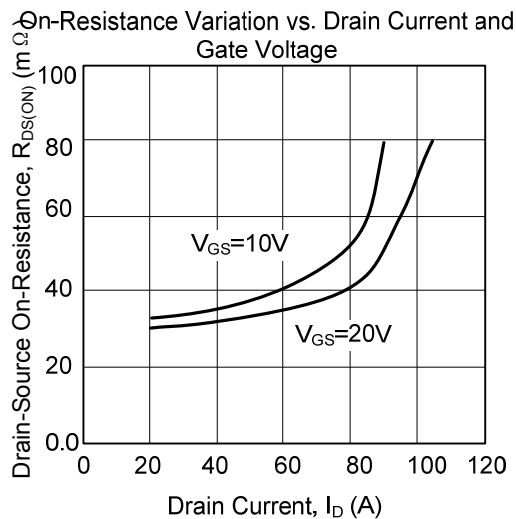
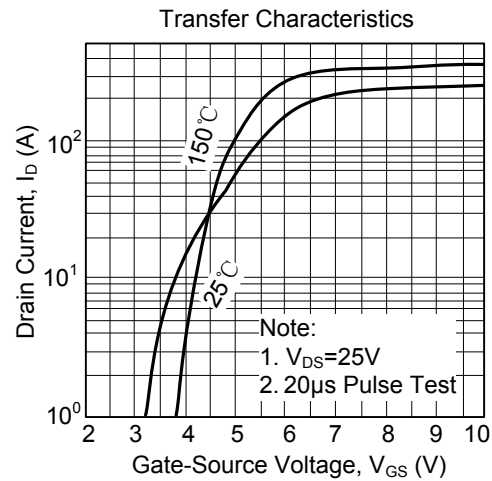
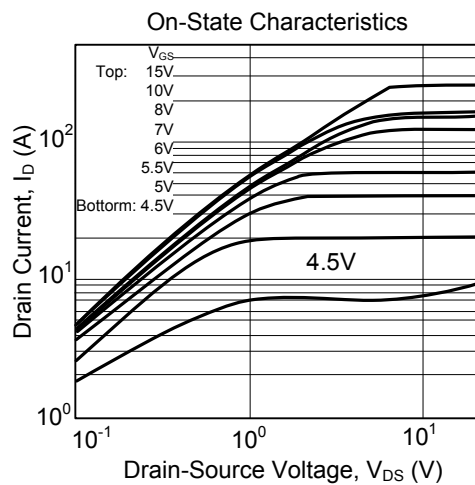


Unclamped Inductive Switching Test Circuit

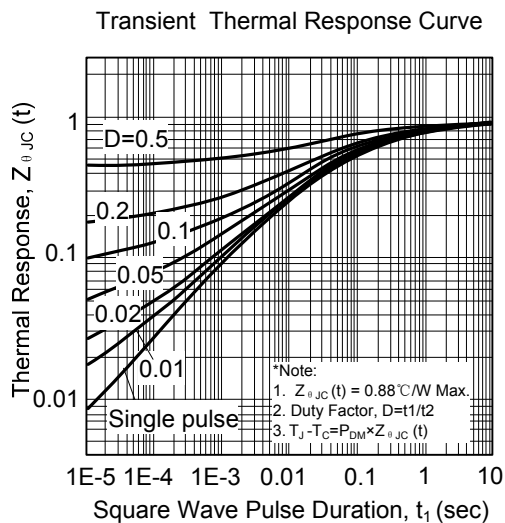
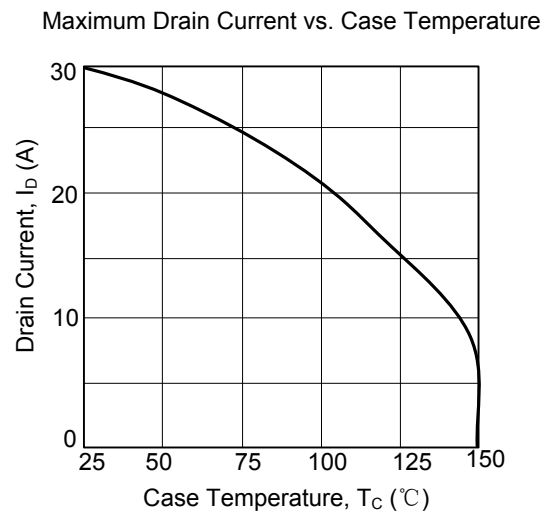
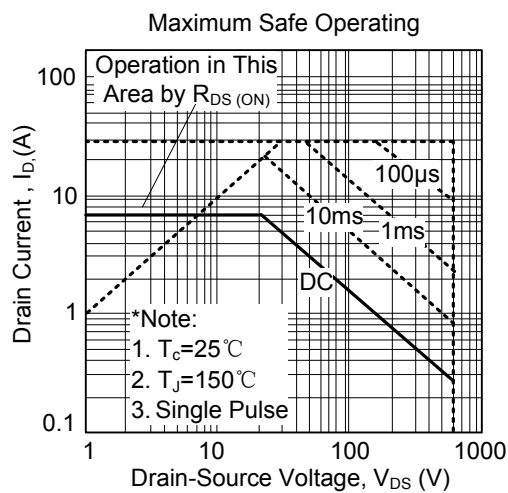
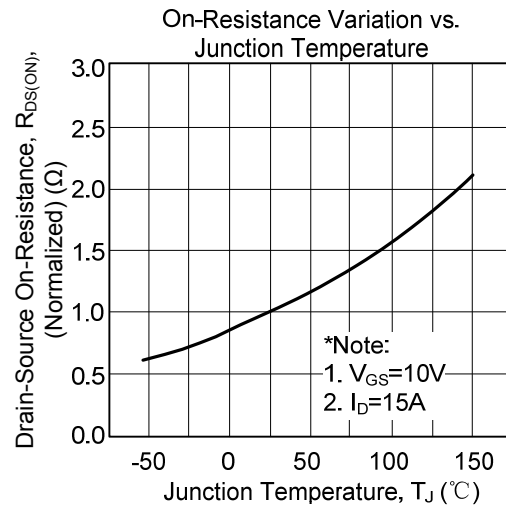
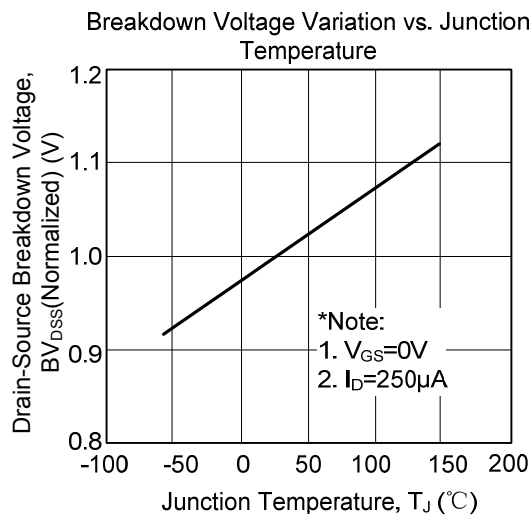


Unclamped Inductive Switching Waveforms

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



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