



UTT75N75M

Power MOSFET

75A, 75V N-CHANNEL ENHANCEMENT MODE TRENCH POWER MOSFET

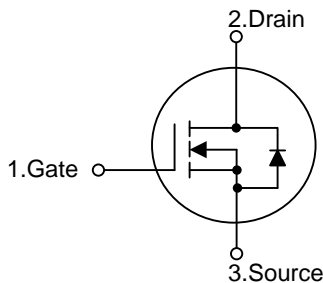
DESCRIPTION

The UTC **UTT75N75M** is N-channel enhancement mode power MOSFET using UTC's advanced technology to provide customers with super low gate charge and fast switching performance. The UTC **UTT75N75M** is suitable for high efficiency synchronous rectification in SMPS, UPS, hard switched and high frequency circuits.

FEATURES

- * $R_{DS(ON)} \leq 9.0 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=37.5\text{A}$
- * $R_{DS(ON)} \leq 12 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=20\text{A}$
- * Fast switching capability
- * Avalanche energy Specified
- * Improved dv/dt capability, high ruggedness

SYMBOL

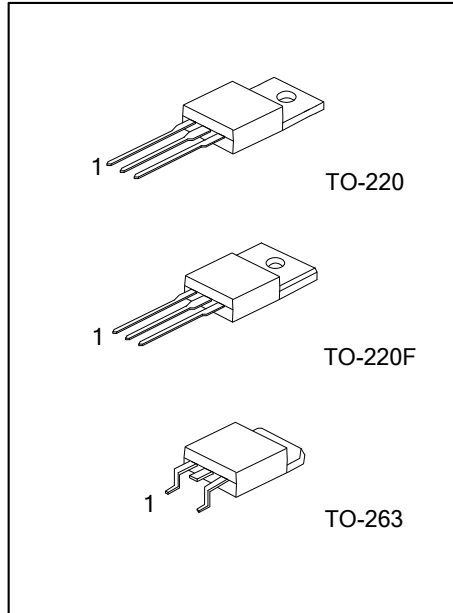


ORDERING INFORMATION

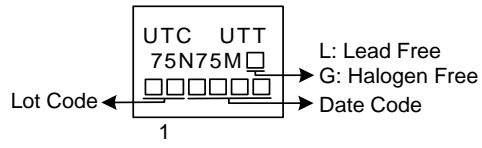
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTT75N75ML-TA3-T	UTT75N75MG-TA3-T	TO-220	G	D	S	Tube
UTT75N75ML-TF3-T	UTT75N75MG-TF3-T	TO-220F	G	D	S	Tube
UTT75N75ML-TQ2-T	UTT75N75MG-TQ2-T	TO-263	G	D	S	Tube
UTT75N75ML-TQ2-R	UTT75N75MG-TQ2-R	TO-263	G	D	S	Tape Reel

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

UTT75N75MG-TA3-T	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) TA3: TO-220, TF3: TO-220F, TQ2: TO-263
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free



MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	75	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current	Continuous	I _D	75	A
Pulsed Drain Current	Pulsed (Note 2)	I _{DM}	150	A
Avalanche energy	Single Pulsed (Note 3)	E _{AS}	140	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	3.0	V/nS
Power Dissipation	TO-220/TO-263	P _D	150	W
	TO-220F		38	W
Junction Temperature		T _J	+150	°C
Storage Temperature Range		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 = 0.1mH, I_{AS} = 53A, V_{DD} = 25V, R_G = 25Ω, Starting T_J = 25°C
 4. I_{SD} ≤ 30A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ T_{JMAX}, T_J = 25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ _{JA}	62.5	°C/W
Junction to Case	TO-220/TO-263	θ _{JC}	0.83	°C/W
	TO-220F		3.3	°C/W

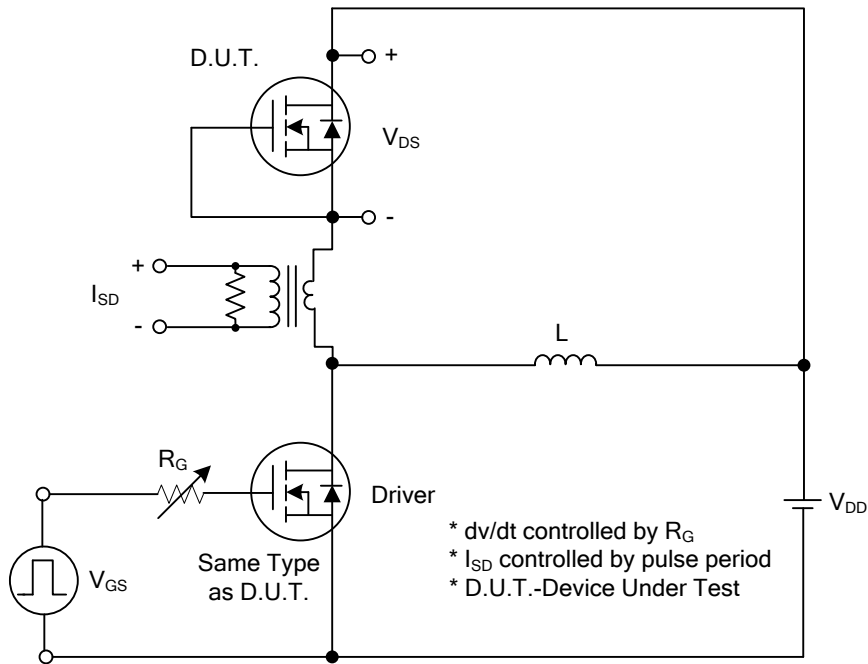
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250μA	75			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =75 V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	Forward	I _{GSS}			100	nA
	Reverse					
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 =37.5A			9.0	mΩ
		V _{GS} =4.5V, I _D =20A			12	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		5350		pF
Output Capacitance	C _{OSS}			380		pF
Reverse Transfer Capacitance	C _{RSS}			200		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 1)	Q _G	V _{DS} =30V, V _{GS} =10V, I _D =1.0A, I _G =1 mA (Note 1, 2)		120		nC
Gate-Source Charge	Q _{GS}			10		nC
Gate-Drain Charge	Q _{GD}			14		nC
Turn-On Delay Time (Note 1)	t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =1.0A, R _G =25Ω (Note 1, 2)		72		ns
Turn-On Rise Time	t _R			63		ns
Turn-Off Delay Time	t _{D(OFF)}			650		ns
Turn-Off Fall Time	t _F			320		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Source Current	I _S				75	A
Pulsed Source Current	I _{SM}				150	A
Drain-Source Diode Forward Voltage (Note 1)	V _{SD}	I _S =75A, V _{GS} =0V			1.5	V
Body Diode Reverse Recovery Time (Note 1)	t _{rr}	I _S =30A, V _{GS} =0V, dI _F /dt=100A/μs		34		nS
Body Diode Reverse Recovery Charge	Q _{rr}				25	

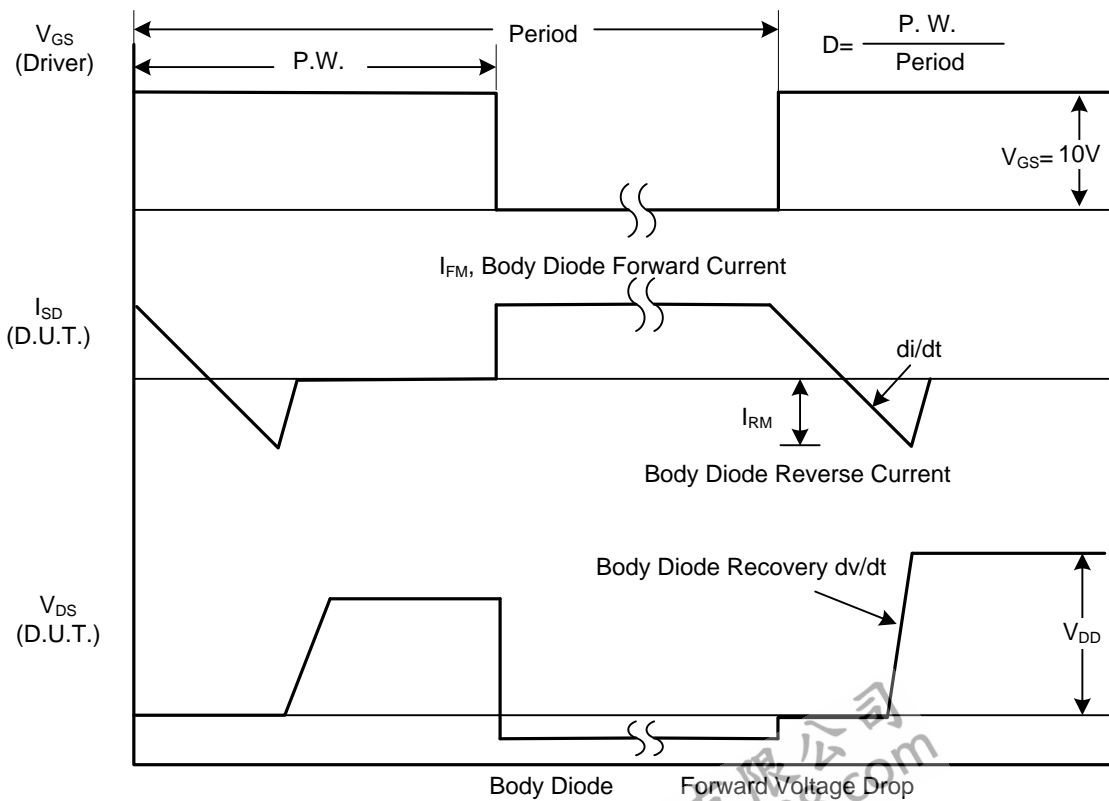
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

TEST CIRCUITS AND WAVEFORMS

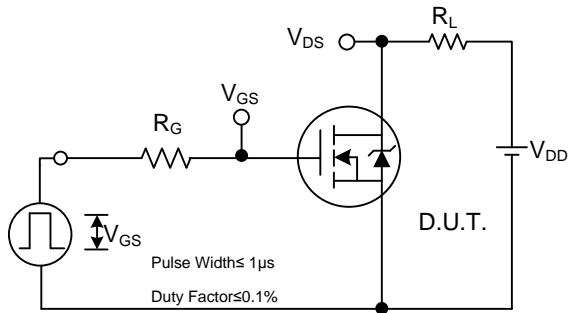


Peak Diode Recovery dv/dt Test Circuit

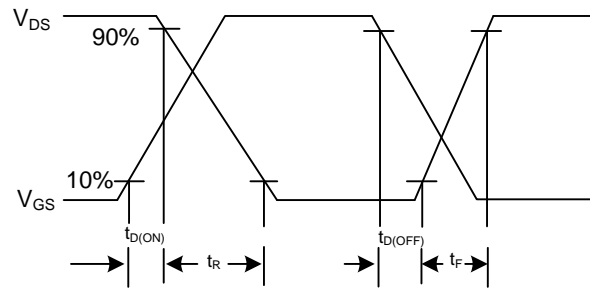


Peak Diode Recovery dv/dt Waveforms

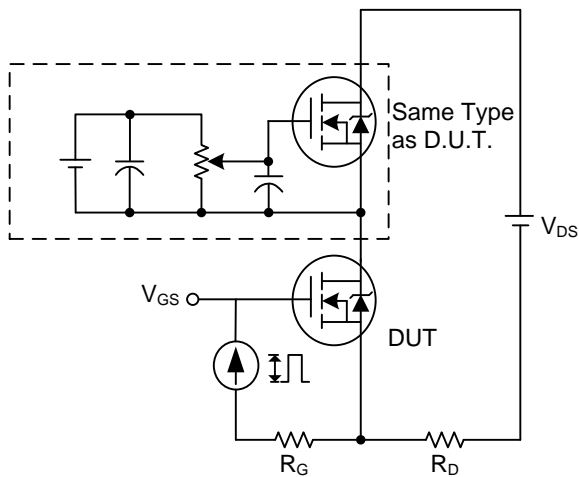
TEST CIRCUITS AND WAVEFORMS



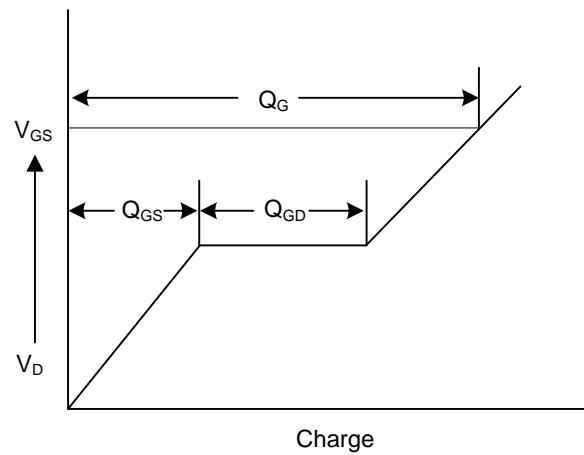
Switching Test Circuit



Switching Waveforms

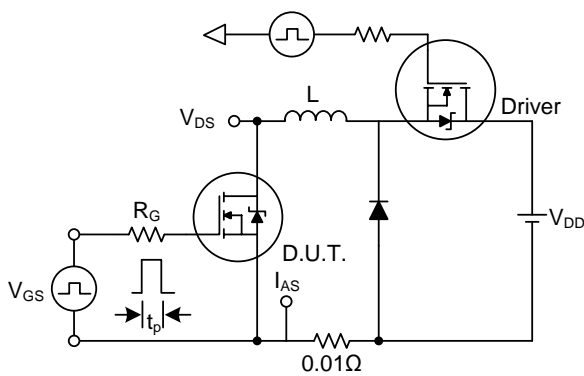


Gate Charge Test Circuit

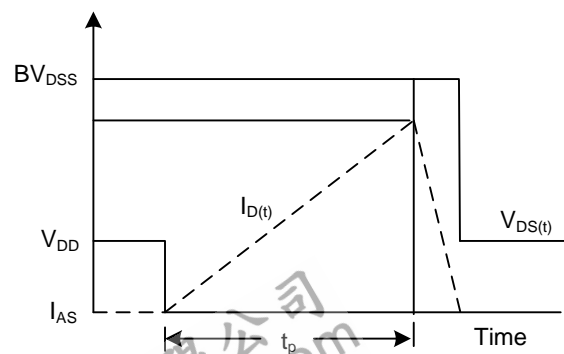


Charge

Gate Charge Waveform

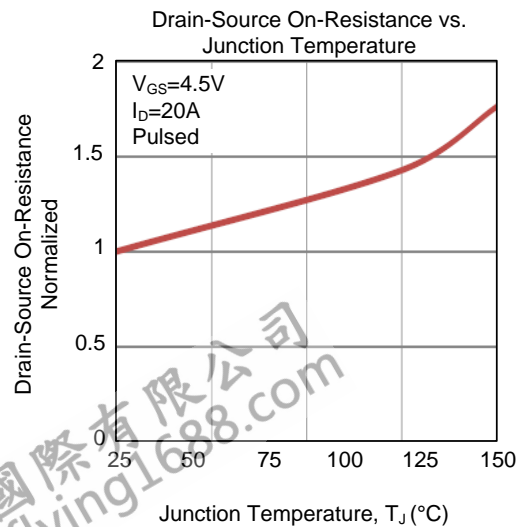
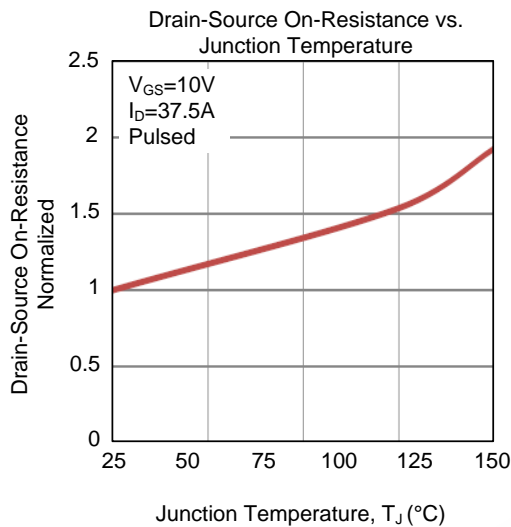
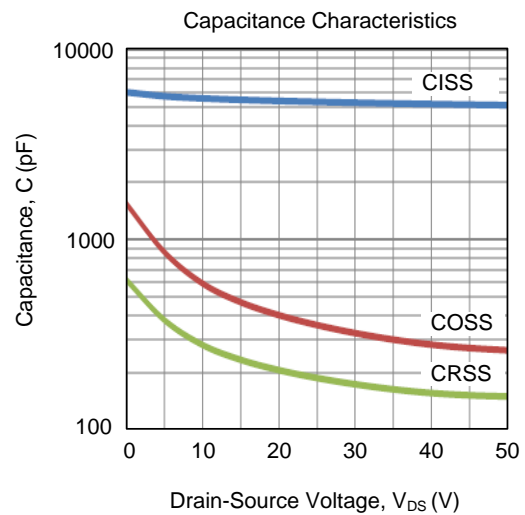
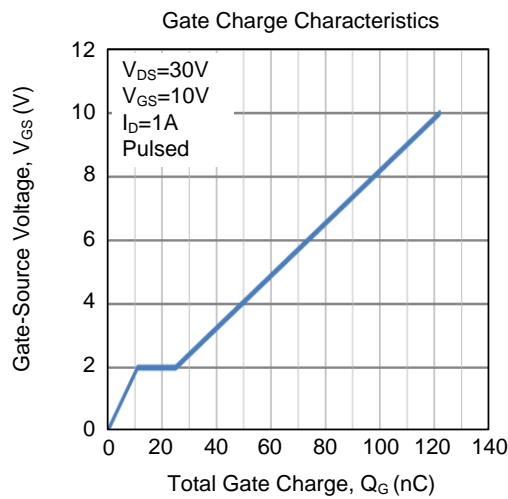
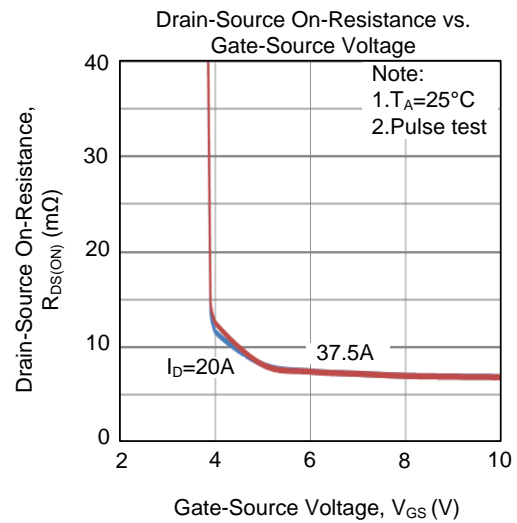
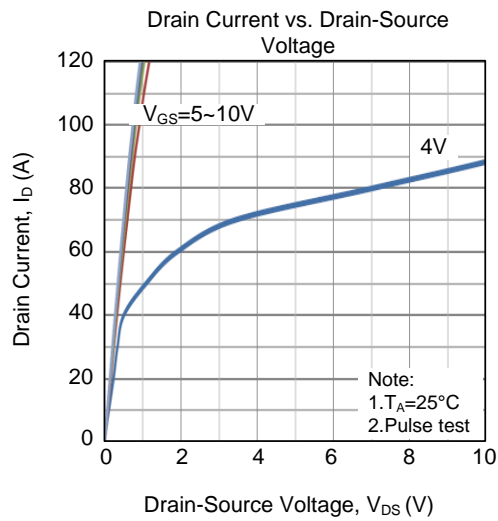


Unclamped Inductive Switching Test Circuit

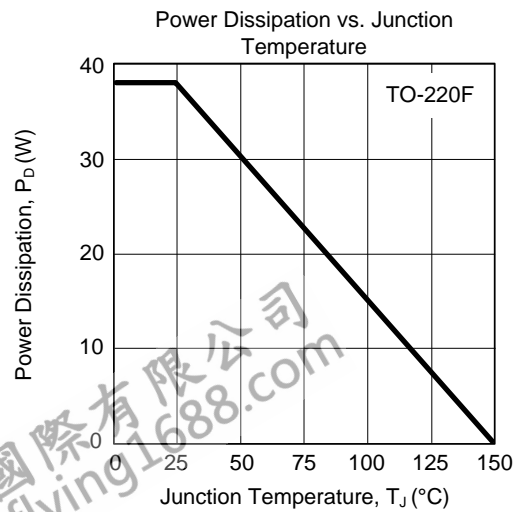
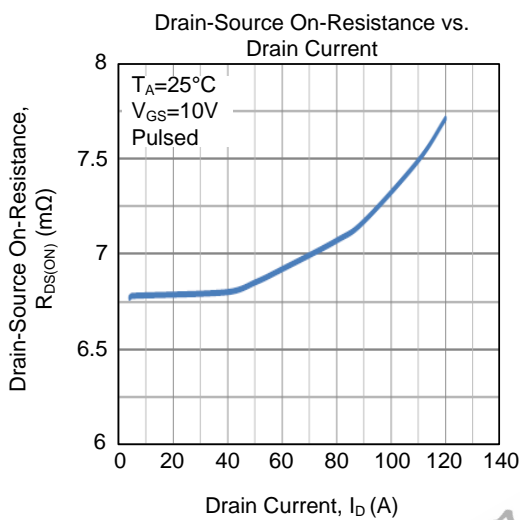
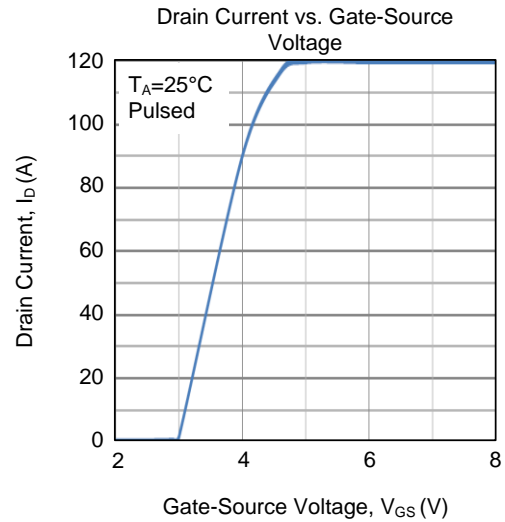
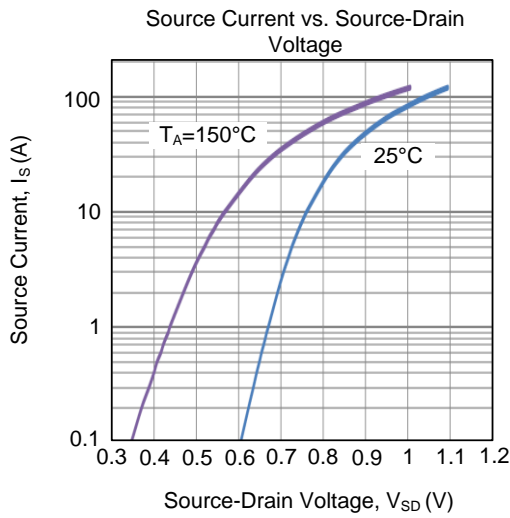
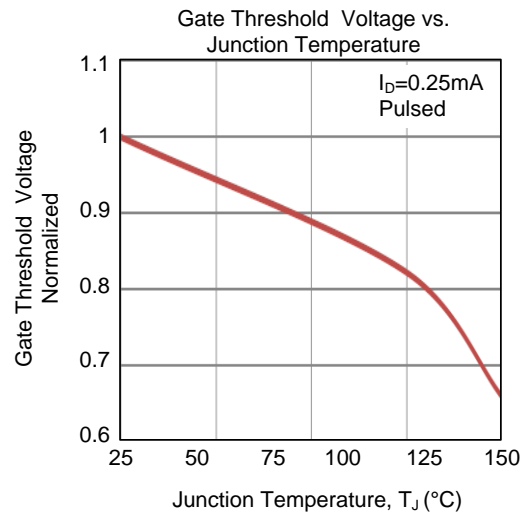
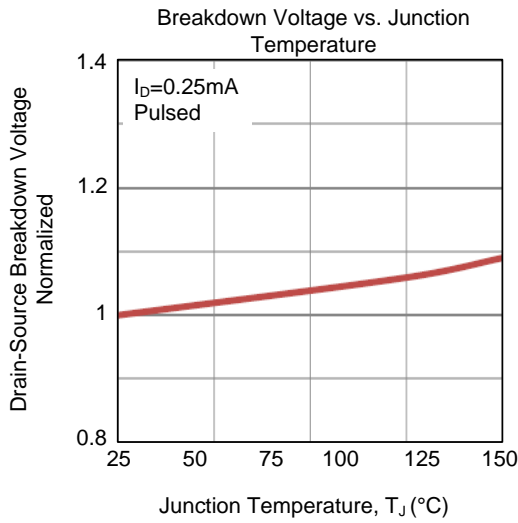


Unclamped Inductive Switching Waveforms

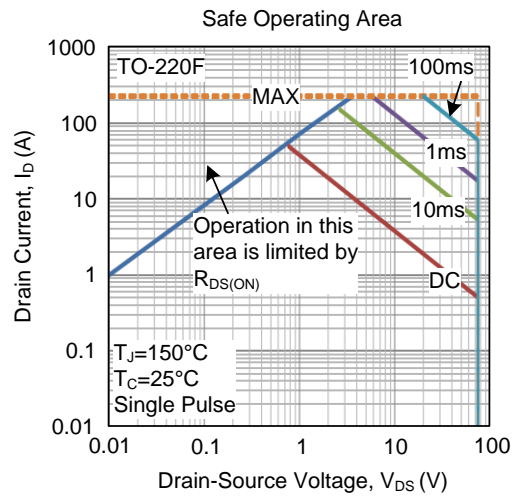
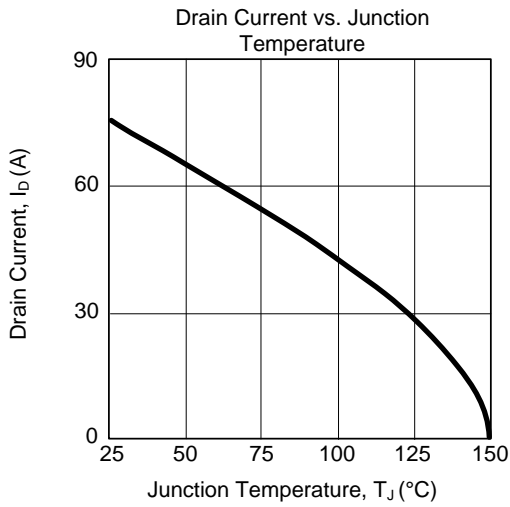
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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