



75N75

Power MOSFET

80A, 75V N-CHANNEL POWER MOSFET

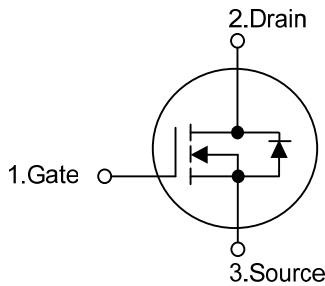
DESCRIPTION

The UTC **75N75** is n-channel enhancement mode power field effect transistors with stable off-state characteristics, fast switching speed, low thermal resistance, usually used at telecom and computer application.

FEATURES

- * $R_{DS(ON)} \leq 11 \text{ m}\Omega @ V_{GS}=10V, I_D=40A$
- * Fast switching capability
- * Avalanche energy Specified
- * Improved dv/dt capability, high ruggedness

SYMBOL

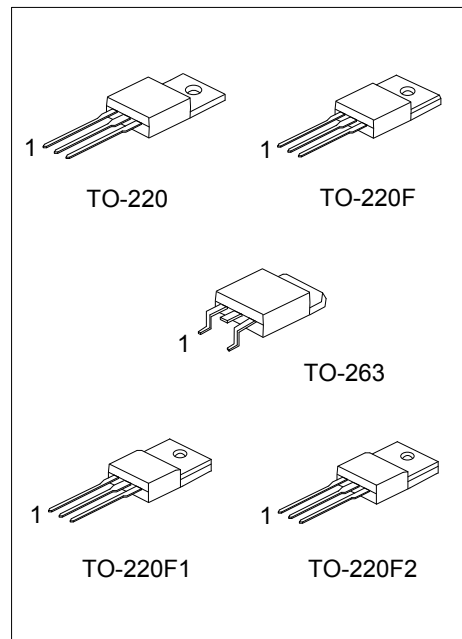


ORDERING INFORMATION

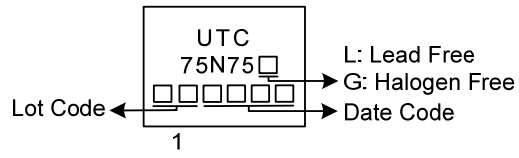
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
75N75L-TA3-T	75N75G-TA3-T	TO-220	G	D	S	Tube
75N75L-TF1-T	75N75G-TF1-T	TO-220F1	G	D	S	Tube
75N75L-TF2-T	75N75G-TF2-T	TO-220F2	G	D	S	Tube
75N75L-TF3-T	75N75G-TF3-T	TO-220F	G	D	S	Tube
75N75L-TQ2-T	75N75G-TQ2-T	TO-263	G	D	S	Tube
75N75L-TQ2-R	75N75G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>75N75G-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, TF2: TO-220F2, TF3: TO-220F, TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	75	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	80	A
Pulsed Drain Current (Note 2)	I_{DM}	160	A
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	525	mJ
Peak Diode Recovery dv/dt (Note 4)	dv/dt	4.8	V/ns
Power Dissipation	TO-220/TO-263	200	W
	TO-220F/ TO-220F1	48	W
	TO-220F2		
Junction Temperature	T_J	+175	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +175	$^{\circ}\text{C}$

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. $L = 0.1 \text{ mH}$, $I_{AS} = 102\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25 \Omega$, Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq 80\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^{\circ}\text{C}/\text{W}$
Junction to Case	TO-220/TO-263	0.62	$^{\circ}\text{C}/\text{W}$
	TO-220F/ TO-220F1	2.6	$^{\circ}\text{C}/\text{W}$
	TO-220F2		

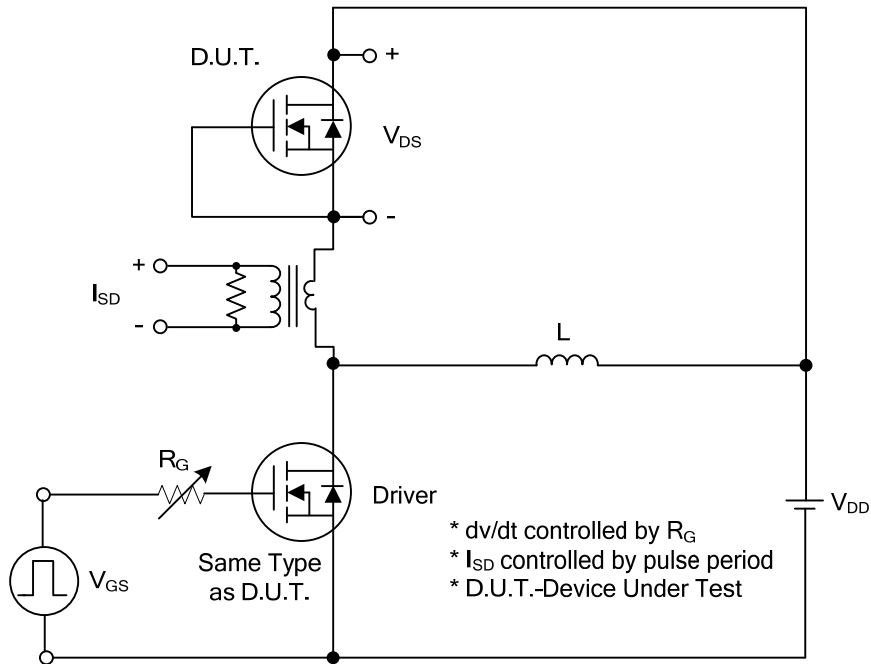
■ ELECTRICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS								
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =250μA	75			V	
Drain-Source Leakage Current		I _{DSS}	V _{DS} =75V, V _{GS} =0V			1	μA	
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V, V _{DS} =0V			100	nA	
	Reverse		V _{GS} =-20V, V _{DS} =0V			-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 =40A		9.5	11	mΩ	
DYNAMIC CHARACTERISTICS								
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1MHz		4000		pF	
Output Capacitance		C _{OSS}				750		pF
Reverse Transfer Capacitance		C _{RSS}				86		pF
SWITCHING CHARACTERISTICS								
Total Gate Charge		Q _G	V _{DS} =30V, V _{GS} =10V, I _D =75A, I _G =1mA (Note 1, 2)		84		nC	
Gate-Source Charge		Q _{GS}				20		nC
Gate-Drain Charge		Q _{GD}				22		nC
Turn-On Delay Time		t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =75A, R _G =25Ω (Note 1, 2)		22		ns	
Turn-On Rise Time		t _R				21		ns
Turn-Off Delay Time		t _{D(OFF)}				48		ns
Turn-Off Fall Time		t _F				18		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS								
Continuous Source Current		I _S				80	A	
Pulsed Source Current (Note 1)		I _{SM}				160	A	
Drain-Source Diode Forward Voltage (Note 2)		V _{SD}	I _S =75A, V _{GS} =0V			1.5	V	
Reverse Recovery Time		t _{rr}	I _S =30A, V _{GS} =0V, dI _F /dt=50A/μs		100		ns	
Reverse Recovery Charge		Q _{rr}				0.65		μC

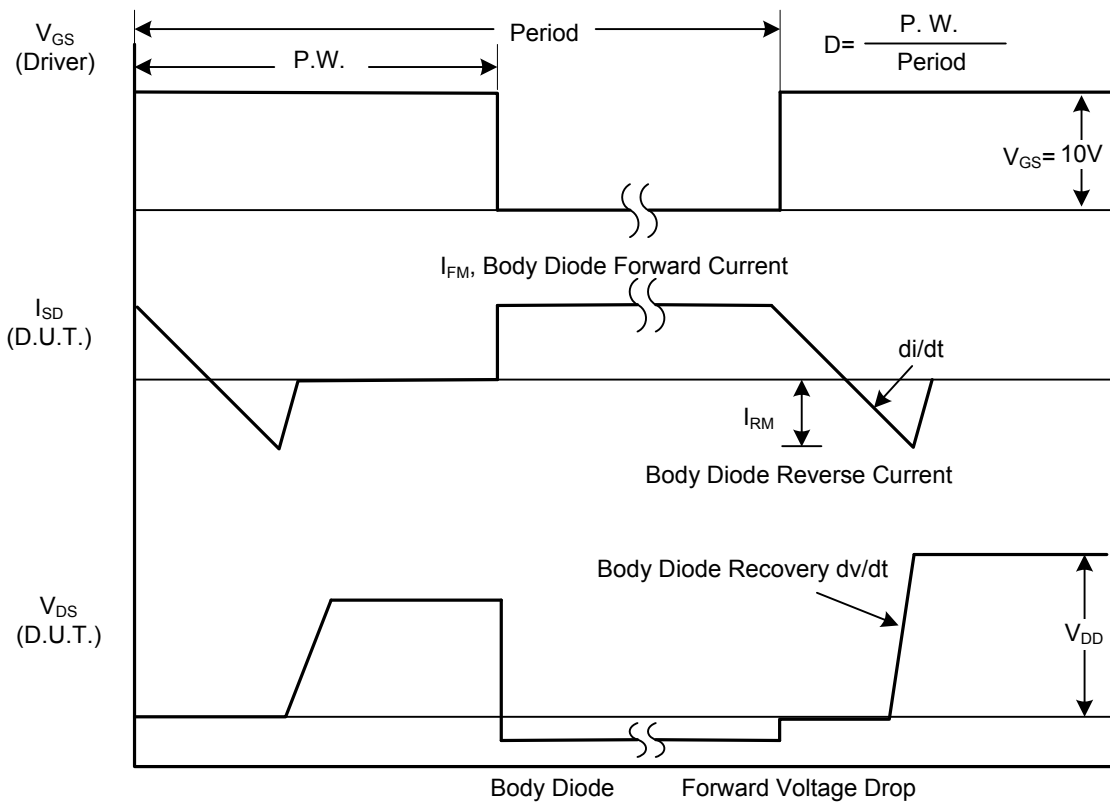
Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

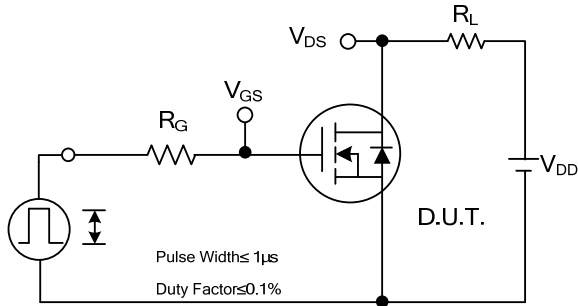


Peak Diode Recovery dv/dt Test Circuit



Peak Diode Recovery dv/dt Waveforms

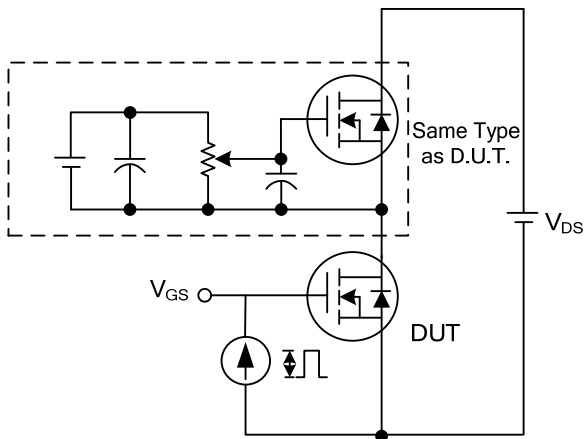
■ TEST CIRCUITS AND WAVEFORMS



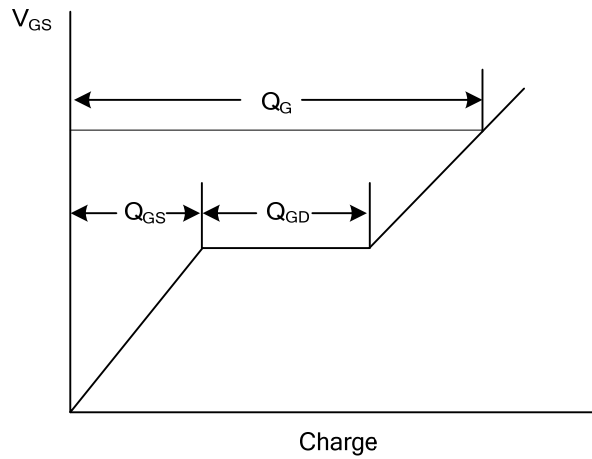
Switching Test Circuit



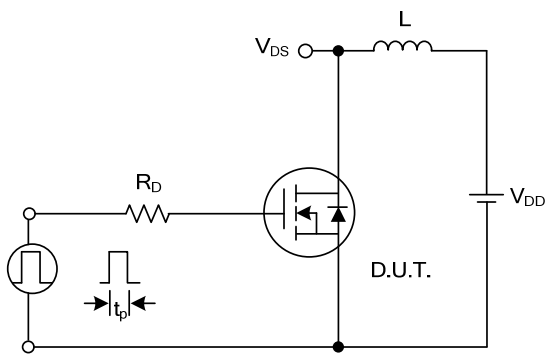
Switching Waveforms



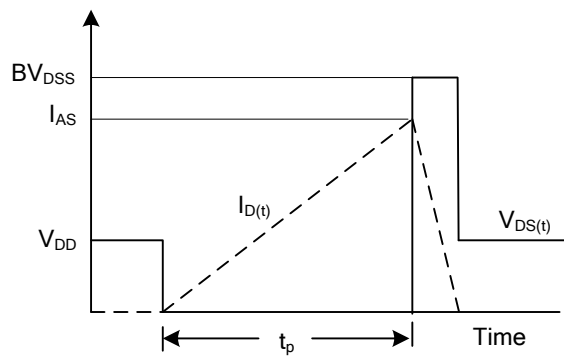
Gate Charge Test Circuit



Gate Charge Waveform

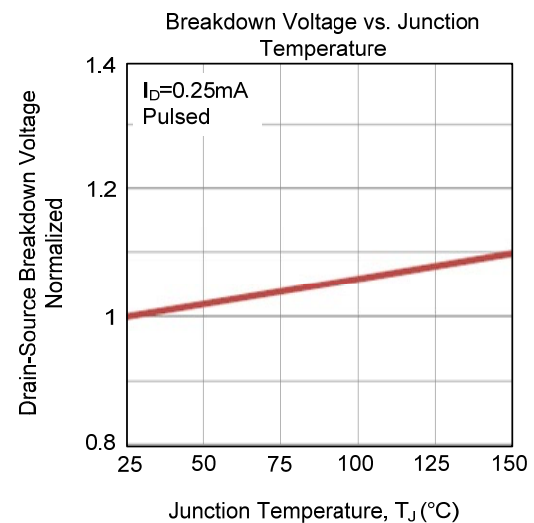
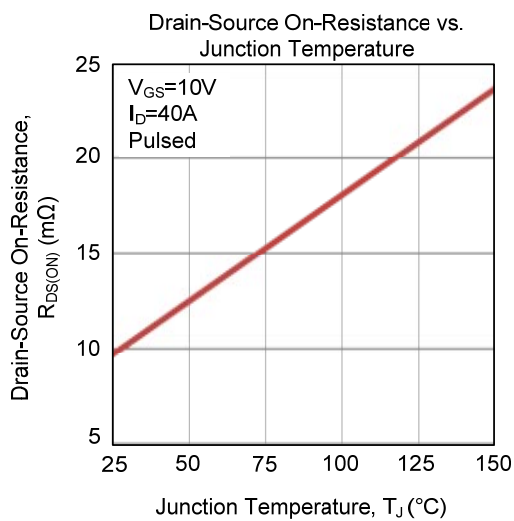
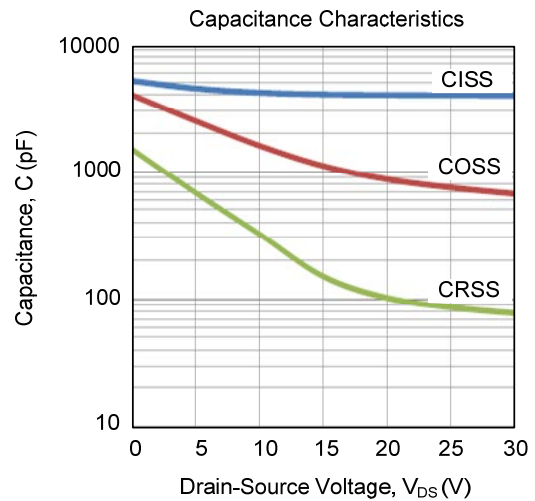
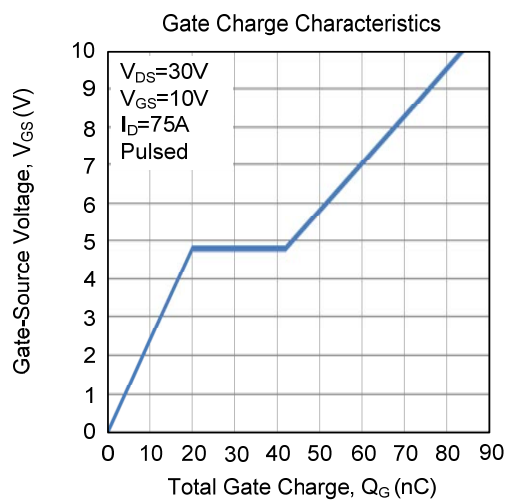
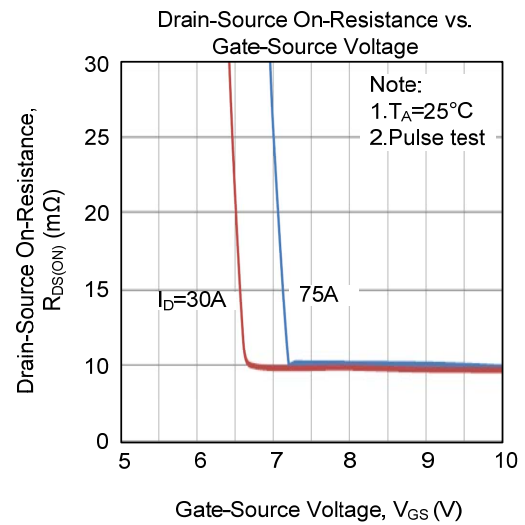
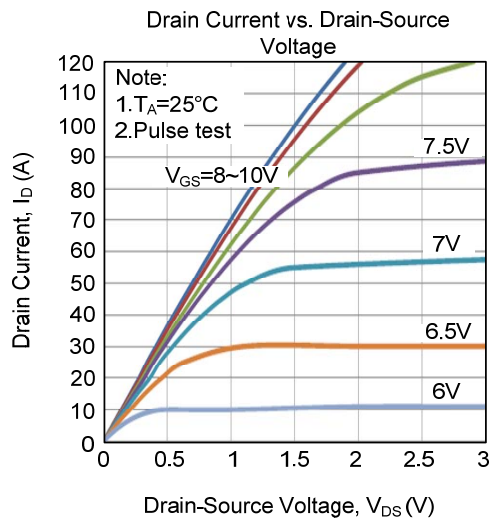


Unclamped Inductive Switching Test Circuit

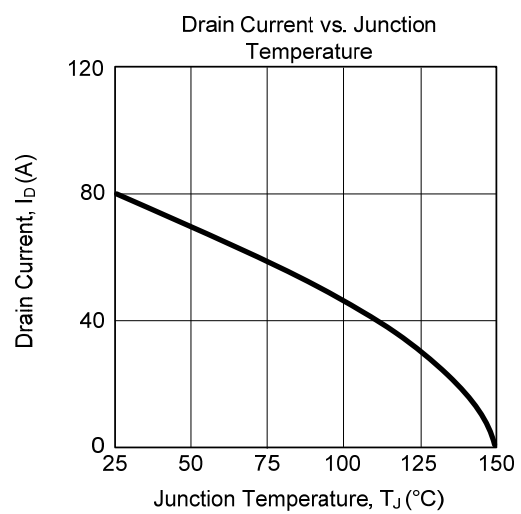
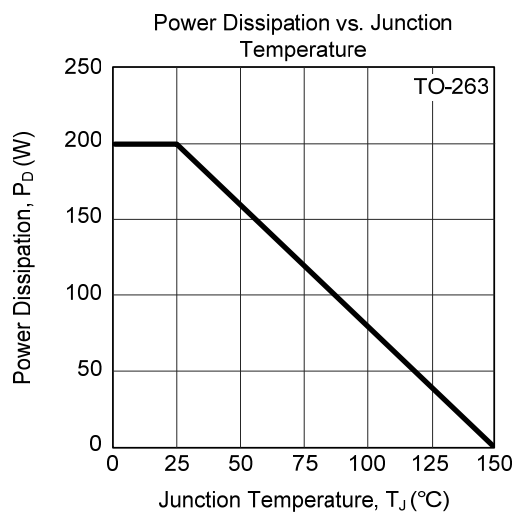
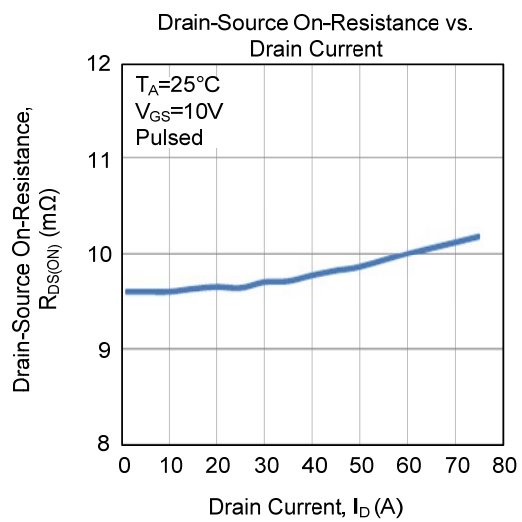
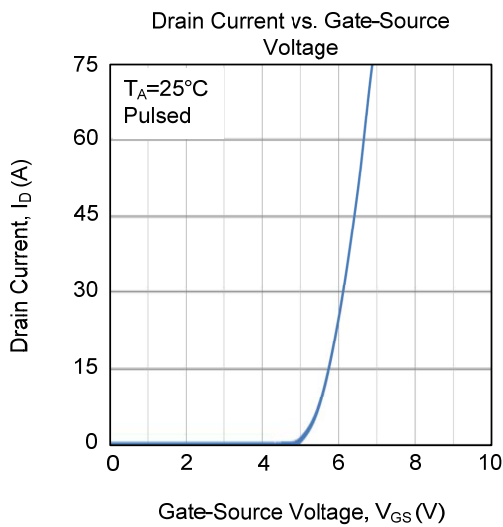
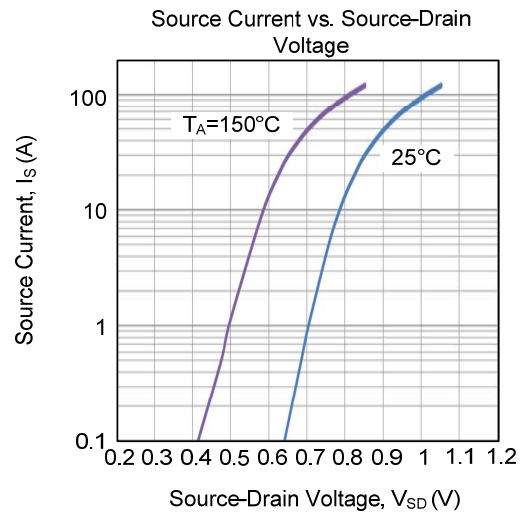
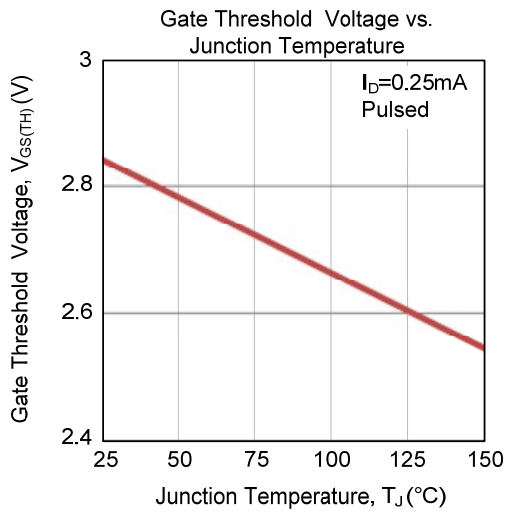


Unclamped Inductive Switching Waveforms

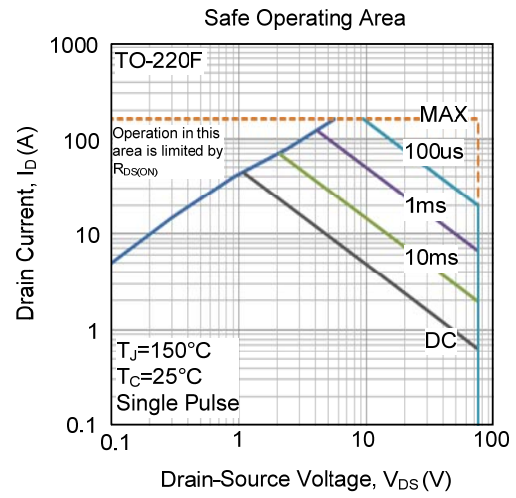
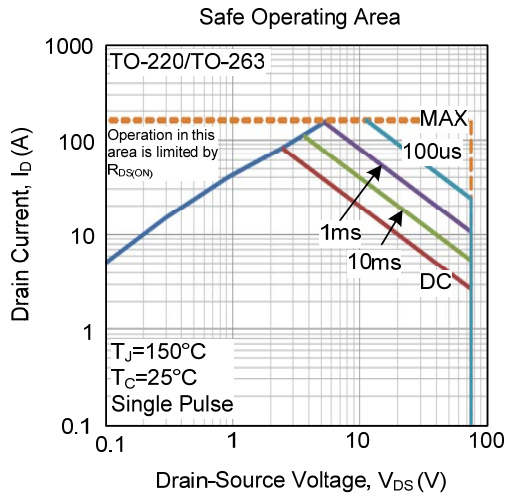
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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