



UF540

Power MOSFET

27A, 100V N-CHANNEL POWER MOSFET

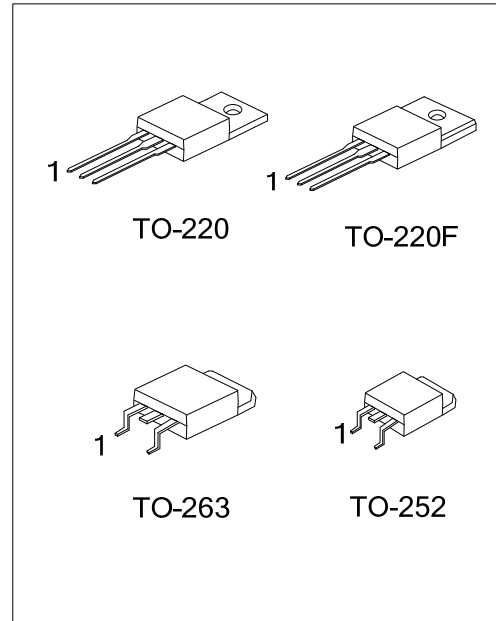
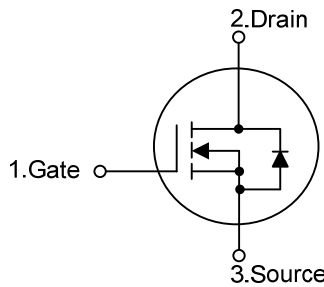
■ DESCRIPTION

The UTC **UF540** is a N-channel enhancement mode power MOSFET using UTC's advanced technology to provide the customers with a minimum on-state resistance and high switching speed.

■ FEATURES

- * $R_{DS(on)} \leq 36m\Omega$ @ $V_{GS}=10V, I_D=15A$
- * High Switching Speed

■ SYMBOL



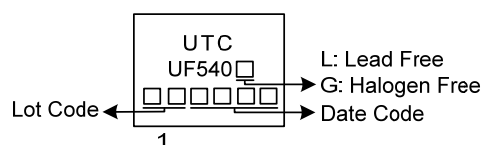
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF540L-TA3-T	UF540G-TA3-T	TO-220	G	D	S	Tube
UF540L-TF3-T	UF540G-TF3-T	TO-220F	G	D	S	Tube
UF540L-TN3-R	UF540G-TN3-R	TO-252	G	D	S	Tape Reel
UF540L-TQ2-T	UF540G-TQ2-T	TO-263	G	D	S	Tube
UF540L-TQ2-R	UF540G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UF540G-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF3: TO-220F, TN3: TO-252</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 (Note 2)		V_{DSS}	100	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Drain Current	Continuous	I_D	$T_C=25^\circ\text{C}$	27	A
			$T_C=100^\circ\text{C}$	17	A
	Pulsed	I_{DM}	108	A	
Power Dissipation ($T_C=25^\circ\text{C}$)	TO-220	P_D	125	W	
	TO-263		40	W	
	TO-220F		55	W	
	TO-252				
Junction Temperature		T_J	+150	$^\circ\text{C}$	
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$	

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. $T_J = +25 \sim +150^\circ\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	TO-220	θ_{JC}	1.0	$^\circ\text{C/W}$
	TO-263		3.125	$^\circ\text{C/W}$
	TO-220F		2.27	$^\circ\text{C/W}$
	TO-252			

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	100			V
Drain-Source Leakage Current		I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	$V_{GS}=+20\text{V}, V_{DS}=0\text{V}$			100	nA
	Reverse		$V_{GS}=-20\text{V}, V_{DS}=0\text{V}$			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=15\text{A}$			36	m Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		1620		pF
Output Capacitance		C_{OSS}			280		pF
Reverse Transfer Capacitance		C_{RSS}			48		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	$V_{DD}=80\text{V}, V_{GS}=10\text{V}, I_D=27\text{A}$		42		nC
Gate to Source Charge		Q_{GS}			8		nC
Gate to Drain Charge		Q_{GD}			15		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=50\text{V}, V_{GS}=10\text{V}, I_D=27\text{A}, R_{GEN}=25\Omega$ (Fig.1, 2) (Note 2)		22		ns
Rise Time		t_R			32		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			123		ns
Fall-Time		t_F			32		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				27	A
Maximum Body-Diode Pulsed Current		I_{SM}				108	A
Drain-Source Diode Forward Voltage		V_{SD}	$I_S=27\text{A}, V_{GS}=0\text{V}$			1.4	V
Body Diode Reverse Recovery Time		t_{rr}	$I_S=4.0\text{A}, dI_S/dt=25\text{A}/\mu\text{s}$		300		ns

Notes: 1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

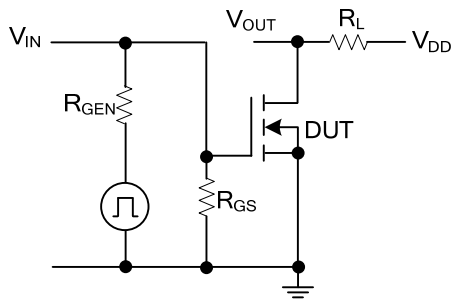


Fig.1 Switching Test Circuit

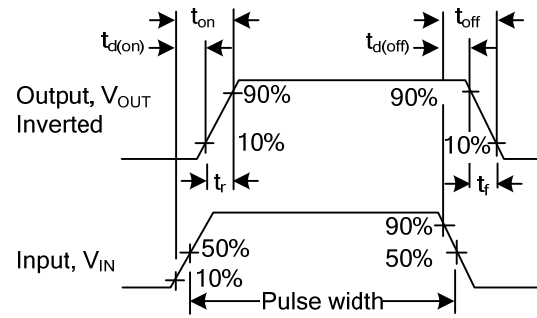
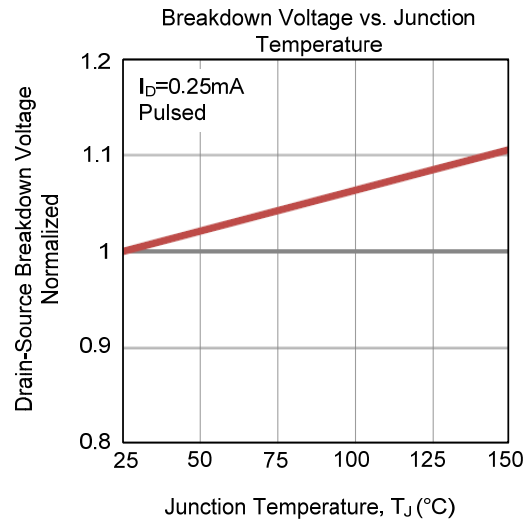
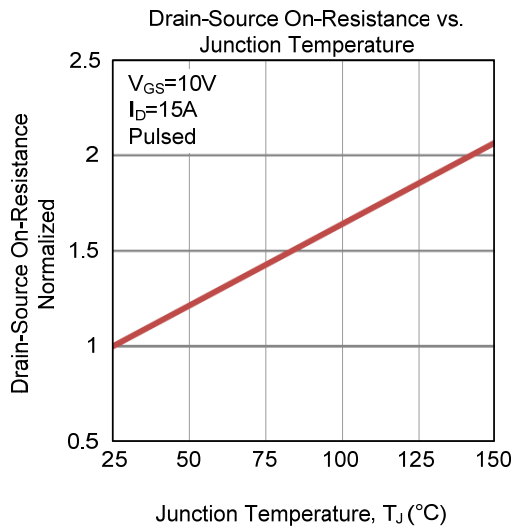
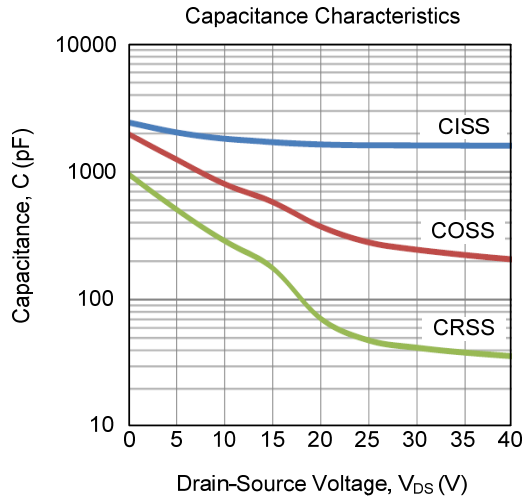
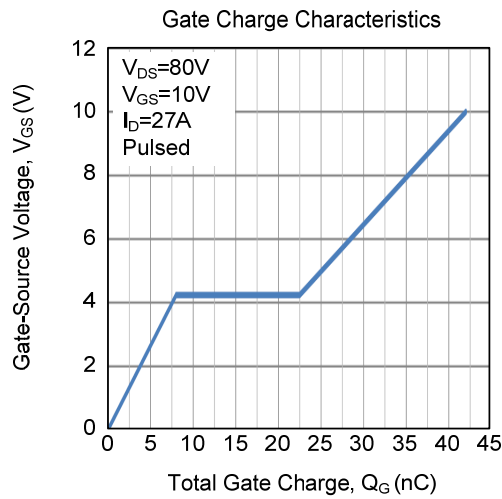
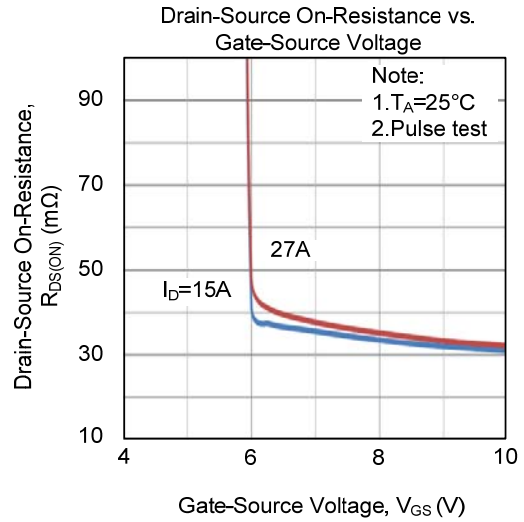
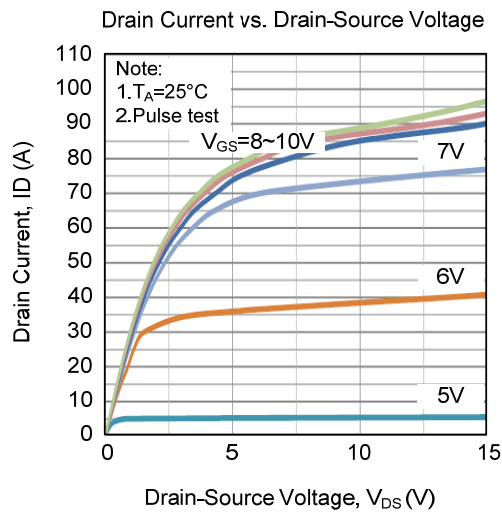
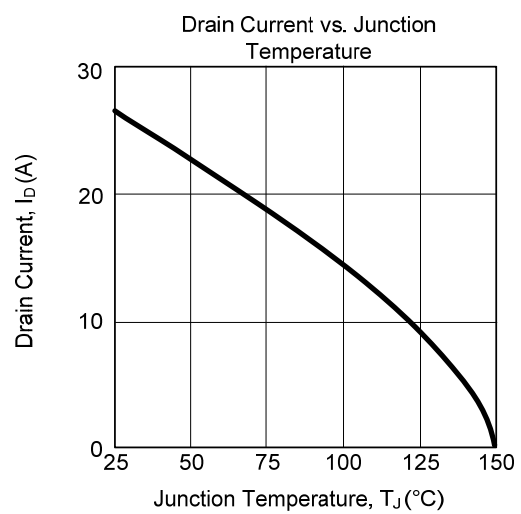
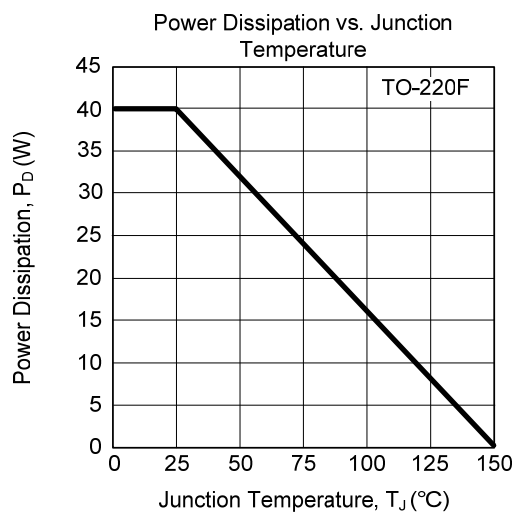
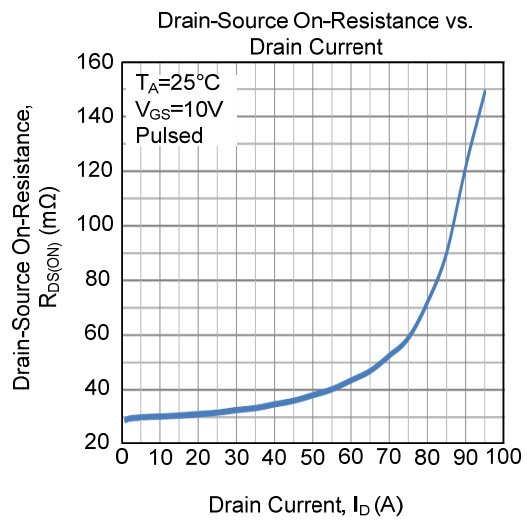
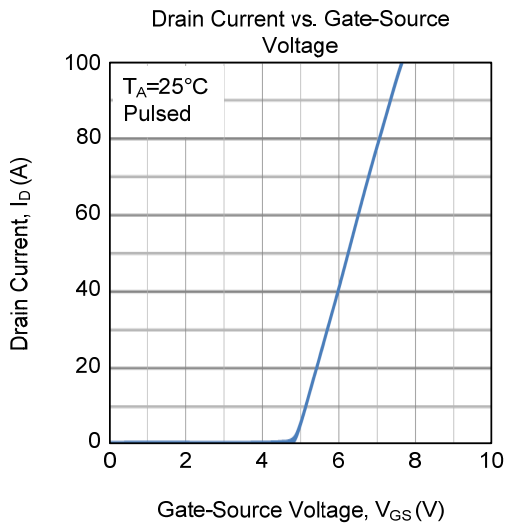
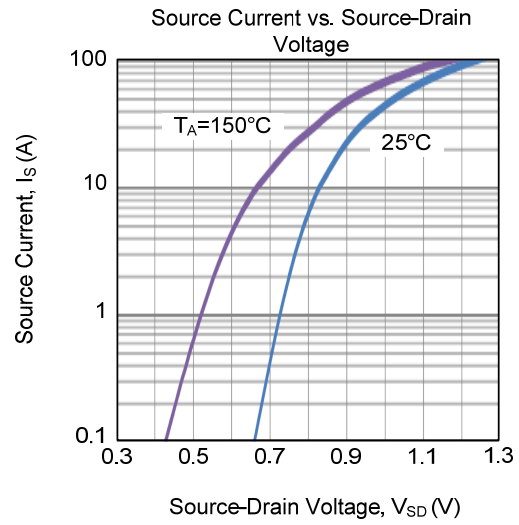
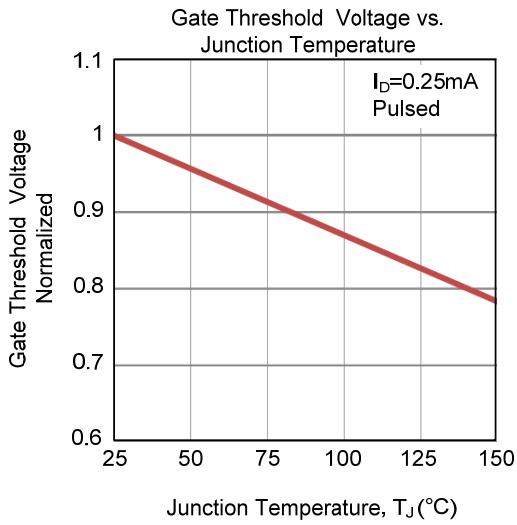


Fig.2 Switching Waveforms

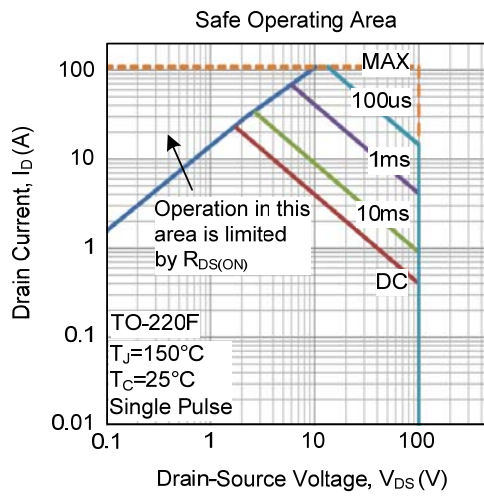
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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