



**UF540**

**Power MOSFET**

**27A, 100V N-CHANNEL POWER MOSFET**

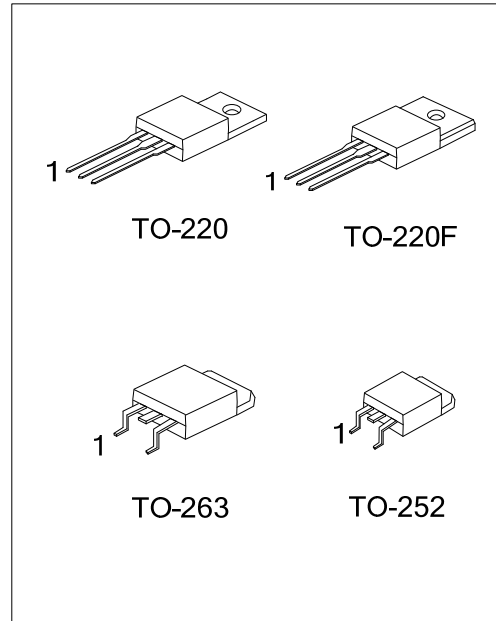
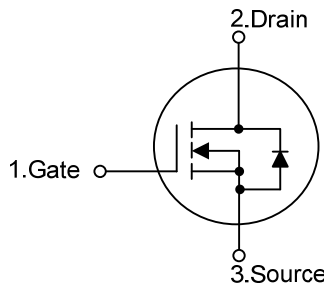
■ DESCRIPTION

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



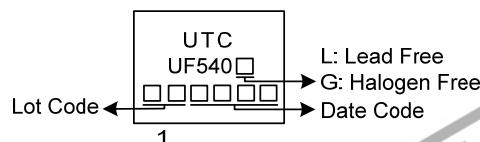
■ ORDERING INFORMATION

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)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,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		$V_{GSS}$	$\pm 20$	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				
	TO-220F		40	W	
	TO-252		55	W	
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	$\theta_{JC}$	1.0	$^\circ\text{C/W}$
	TO-263			
	TO-220F		3.125	$^\circ\text{C/W}$
	TO-252		2.27	$^\circ\text{C/W}$

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

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>							
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	$\mu\text{A}$
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
<b>ON CHARACTERISTICS</b>							
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 $\Omega$
<b>DYNAMIC PARAMETERS</b>							
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
<b>SWITCHING PARAMETERS</b>							
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
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
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

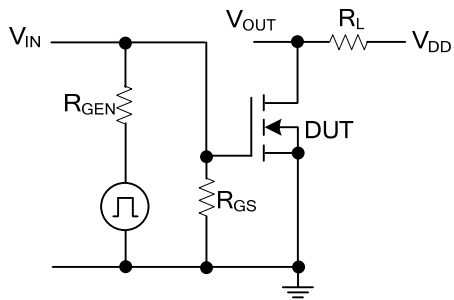


Fig.1 Switching Test Circuit

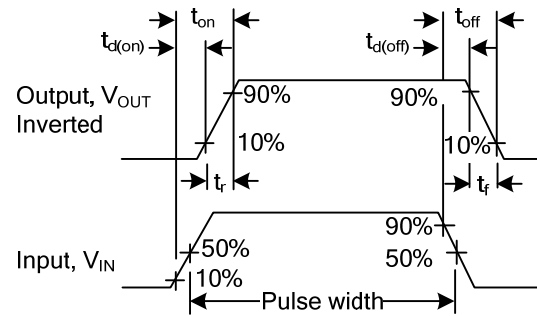
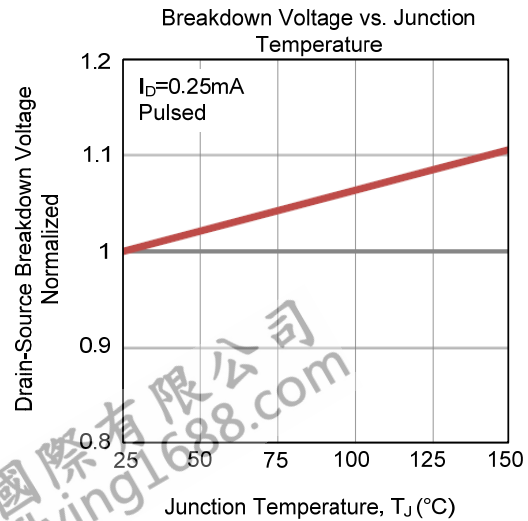
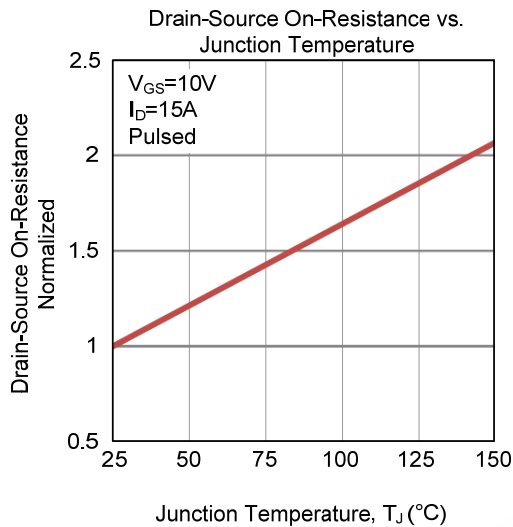
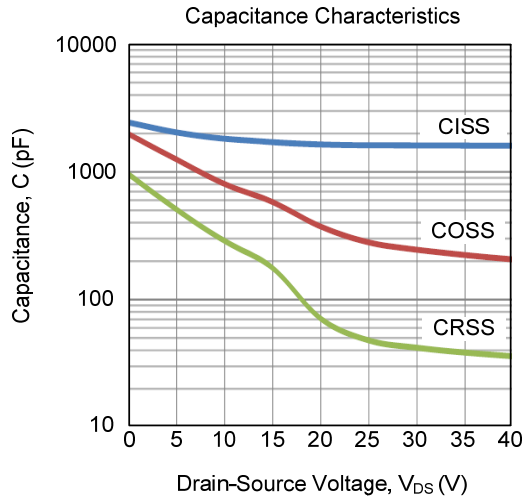
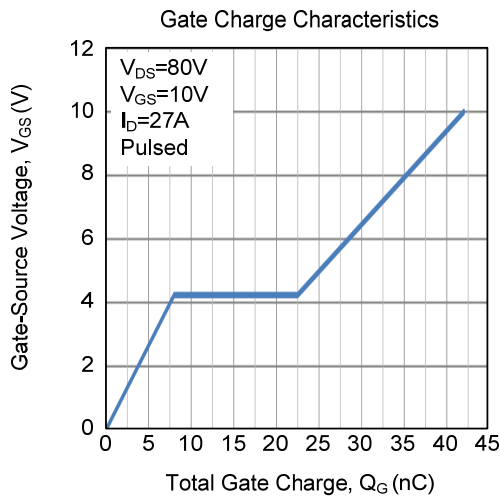
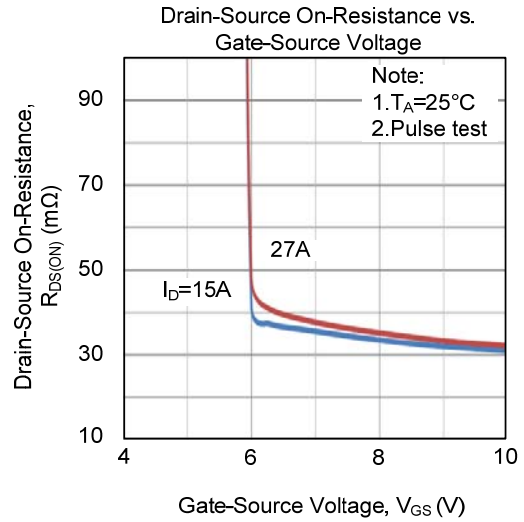
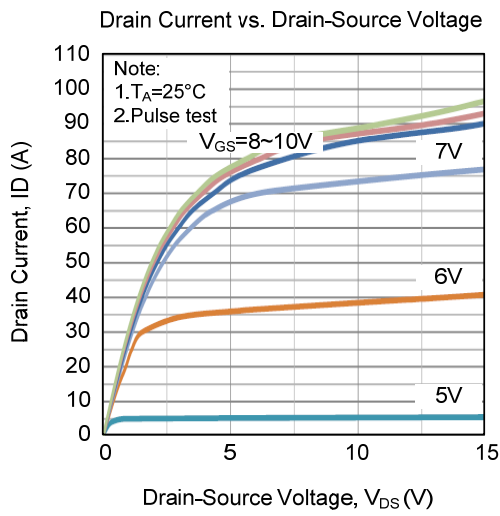


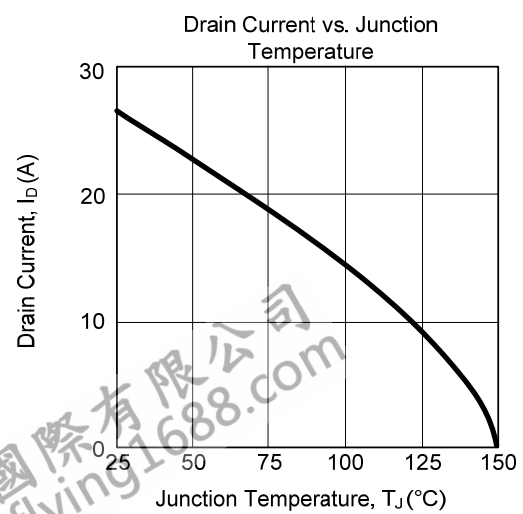
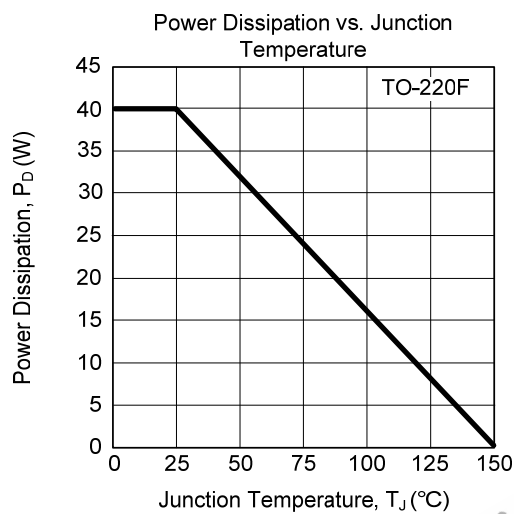
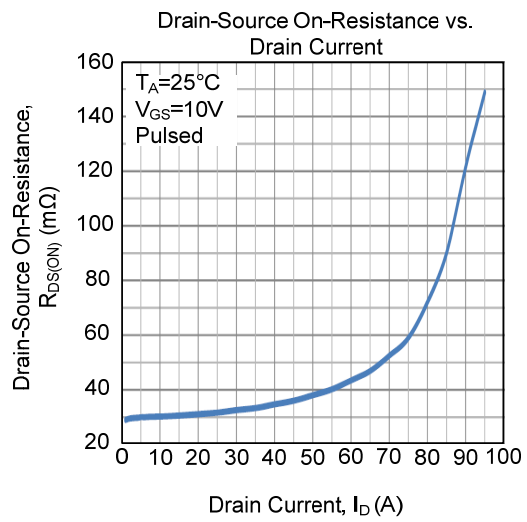
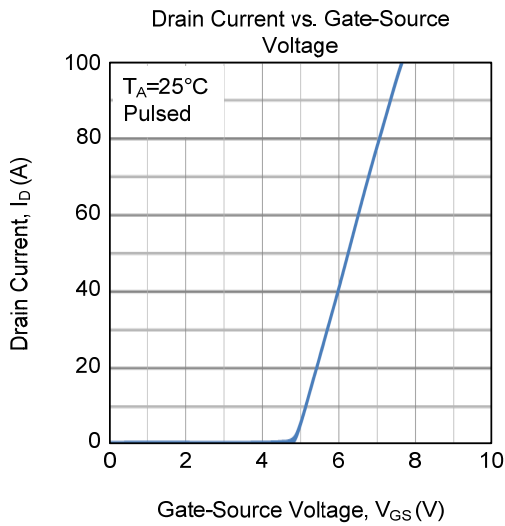
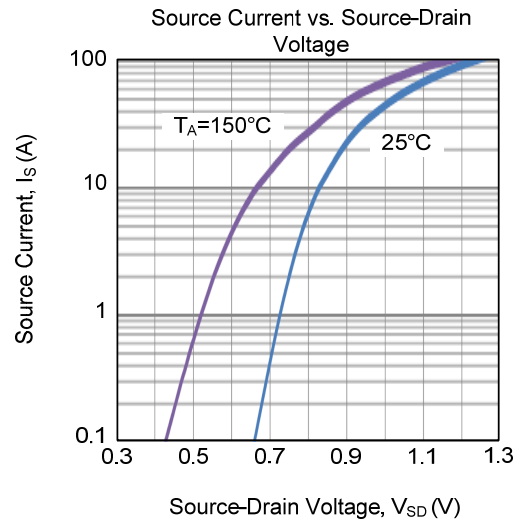
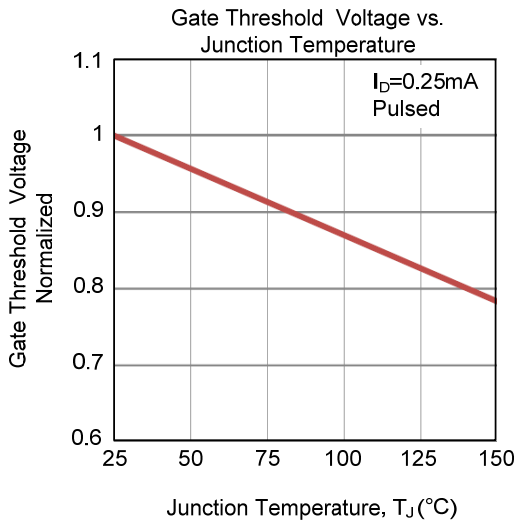
Fig.2 Switching Waveforms

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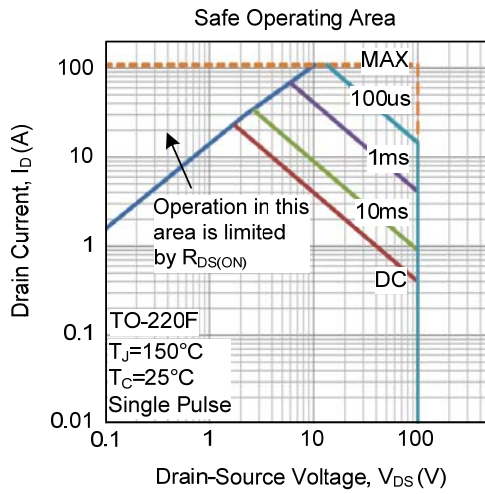
## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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