



## UF540

Preliminary

Power MOSFET

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

#### DESCRIPTION

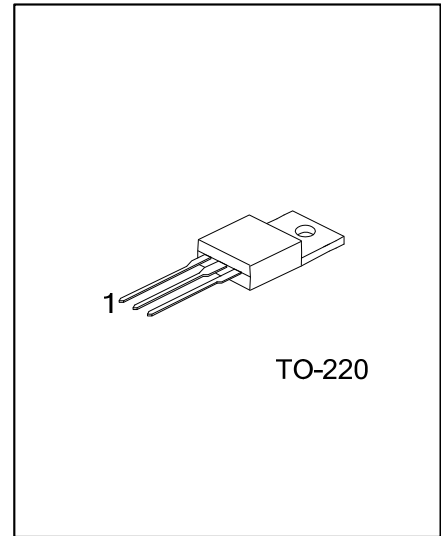
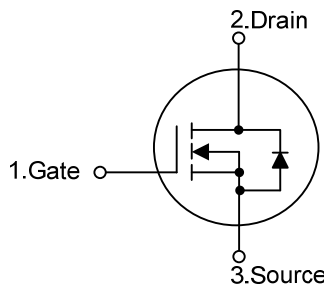
The UTC **UF540** is an N-channel enhancement mode power MOSFET using UTC's advanced technology to provide the customers with a minimum on-state resistance and high switching speed.

The UTC **UF540** is suitable for AC&DC motor controls and switching power supply, etc

#### FEATURES

- \*  $R_{DS(on)} < 85m\Omega @ V_{GS} = 10V, I_D = 15A$
- \* 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

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

<p>UF540L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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### ■ 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 ( $T_C=25^\circ\text{C}$ )		$P_D$	125	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	$\theta_{JC}$	1.0	$^\circ\text{C/W}$

### ■ 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	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$			250	$\mu\text{A}$	
Gate-Source Leakage Current		$I_{GSS}$			$V_{GS}=+20\text{V}$ , $V_{DS}=0\text{V}$	+500	nA
					$V_{GS}=-20\text{V}$ , $V_{DS}=0\text{V}$	-500	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	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ , $I_D=15\text{A}$			0.085	$\Omega$	
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$		1960		pF	
Output Capacitance	$C_{OSS}$			250		pF	
Reverse Transfer Capacitance	$C_{RSS}$			40		pF	
<b>SWITCHING PARAMETERS</b>							
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=45\text{V}$ , $I_D=15\text{A}$ , $V_{GS}=10\text{V}$ , $R_{GEN}=5.1\Omega$ (Fig.1, 2) (Note 2)		11		ns	
Rise Time	$t_R$			35		ns	
Turn-OFF Delay Time	$t_{D(OFF)}$			39		ns	
Fall-Time	$t_F$			35		ns	
Total Gate Charge	$Q_G$	$V_{DD}=35\text{V}$ , $I_D=27\text{A}$ , $V_{GS}=10\text{V}$ ,		71		nC	
Gate to Source Charge	$Q_{GS}$			14		nC	
Gate to Drain Charge	$Q_{GD}$			21		nC	
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=27\text{A}$ , $V_{GS}=0\text{V}$		2.0	2.5	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	
Maximum Body-Diode Continuous Current	$I_S$				27	A	
Maximum Body-Diode Pulsed Current	$I_{SM}$				108	A	

Notes: 1. Pulse width limited by  $T_J$

2. Switching time measurements performed on LEM TR-58 Test equipment

■ TEST CIRCUITS AND WAVEFORMS

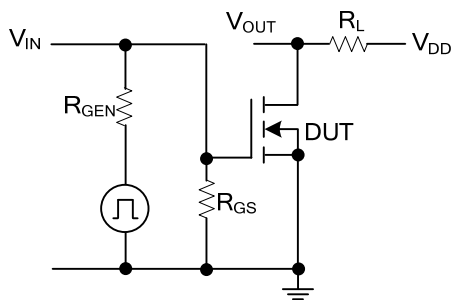


Fig.1 Switching Test Circuit

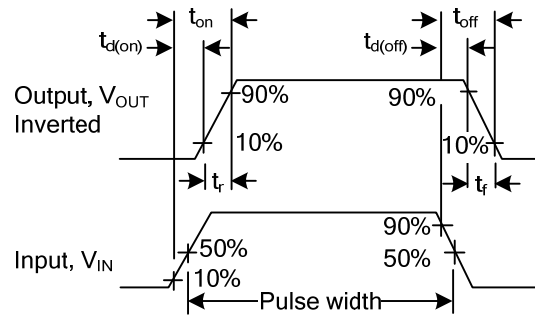


Fig.2 Switching Waveforms

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