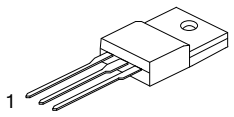
40A, 150V N-CHANNEL POWER MOSFET



TO-220F2

■ DESCRIPTION

The UTC **40N15** is an N-channel enhancement MOSFET, it uses UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, high switching speed, high current capacity and low gate charge.

■ FEATURES

* $R_{DS(ON)}$<42mΩ @ V_{GS}=10V,I_D=20A
* High Switching Speed
* High Current Capacity
* Low Gate Charge(typical 85nC)

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
40N15L-TF2-T	40N15LG-TF2-T	TO-220F2	G	D	S	Tube

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

40N15L-TF2-T (1)Packing Type (2)Package Type (3)Lead Free	(1) T: Tube (2) TF2: TO-220F2 (3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GSS}	±25	V
Drain Current	Continuous	I_D	40	A
	Pulsed	I_{DM}	180	A
Avalanche Current		I_{AR}	45.6	A
Avalanche Energy	Single Pulsed	E_{AS}	650	mJ
	Repetitive	E_{AR}	21	mJ
Peak Diode Recovery dv/dt		dv/dt	6	V/ns
Power Dissipation		P_D	210	W
Junction Temperature		T_J	-50~+150	°C
Storage Temperature Range		T_{STG}	-50~+150	°C

Note: 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.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	0.7	°C/W

■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	150			V
Breakdown Voltage Temperature Coefficient		$\triangle BV_{DSS}/\triangle T_J$			0.16		V/°C
Drain-Source Leakage Current		I_{DSS}	V_{GS}=0V, V_{DS}=150V			900	nA
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	2.2		3.8	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	5		42	mΩ
Forward Transconductance		g_{FS}			33		s
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}			2500	3250	pF
Output Capacitance		C_{OSS}			520	670	pF
Reverse Transfer Capacitance		C_{RSS}			100	130	pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DD}=50V, I_D=1.3A, I_G=100μA		85	110	nC
Gate to Source Charge		Q_{GS}			15		nC
Gate to Drain Charge		Q_{GD}			41		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{GS}=0~10V, V_{DD}=30V, I_D=0.5A, R_G=25Ω		35	80	ns
Rise Time		t_R			320	650	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			210	430	ns
Fall-Time		t_F			200	410	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				45.6	A
Maximum Body-Diode Pulsed Current		I_{SM}				182.4	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=40A, V_{GS}=0V	0.1		1.48	V
Body Diode Reverse Recovery Time		t_{RR}	V_{GS}=0V, I_S=45.6A, dI_F/d_t=100A/μs		130		ns
Body Diode Reverse Recovery Charge		Q_{RR}			0.55		μC