

## 40N15

## **Power MOSFET**

# 40A, 150V N-CHANNEL POWER MOSFET

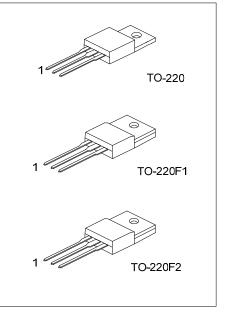
#### DESCRIPTION

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

#### FEATURES

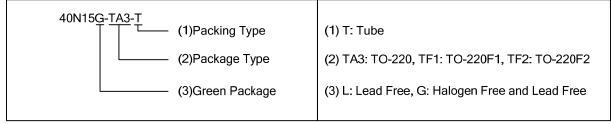
- \*  $R_{DS(ON)}$  < 50m $\Omega$  @  $V_{GS}$ =10V,  $I_D$ =20A
- \* High Switching Speed
- \* High Current Capacity

#### ORDERING INFORMATION

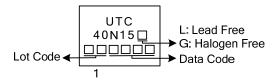


Ordering Number		Daakaga	Pin Assignment			Dooking	
Lead Free	Halogen Free	Package	1	2	3	Packing	
40N15L-TA3-T	40N15G-TA3-T	TO-220	G	D	S	Tube	
40N15L-TF1-T	40N15G-TF1-T	TO-220F1	G	D	S	Tube	
40N15L-TF2-T	40N15G-TF2-T	TO-220F2	G	D	S	Tube	
Noto: Din Assignment: C: Coto D: Drain S: Source							

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



### ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	150	V
Gate-Source Voltage		V <sub>GSS</sub> ±25		V
	Continuous	I <sub>D</sub>	40	А
Drain Current	Pulsed	I <sub>DM</sub>	180 A   45.6 A   650 mJ   21 mJ	А
Avalanche Current		I <sub>AR</sub>	45.6	А
	Single Pulsed	E <sub>AS</sub>	650	mJ
Avalanche Energy	Repetitive	E <sub>AR</sub>	21	mJ
Peak Diode Recovery dv/dt		dv/dt	7	V/ns
Dower Dissinction	TO-220	D	166	W
Power Dissipation		210	W	
Junction Temperature		ТJ	-50 ~ +150	°C
Storage Temperature Range		T <sub>STG</sub>	-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 <sub>JA</sub>	62.5	°C/W
lunation to Case	TO-220	0	0.9	°C/W
Junction to Case	TO-220F1/ TO-220F2	θις	0.7	°C/W

#### ■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS			1	-			
Drain-Source Breakdown Voltage		BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250µA	150			V
Prain-Source Leakage Current		I <sub>DSS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =150V			900	nA
Gate-Source Leakage Current	Forward	- I <sub>GSS</sub>	$V_{GS}$ =+20V, $V_{DS}$ =0V			+100	nA
	Reverse	IGSS	V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V <sub>GS(TH)</sub>	$V_{DS}=V_{GS}$ , $I_{D}=250\mu A$	2.2		3.8	V
Static Drain-Source On-State Res	sistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A			50	mΩ
DYNAMIC PARAMETERS							
Input Capacitance	Input Capacitance				2500		pF
Output Capacitance		C <sub>OSS</sub>	−V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, −f=1.0MHz		520		pF
Reverse Transfer Capacitance		C <sub>RSS</sub>	1-1.000112		100		pF
SWITCHING PARAMETERS							
Total Gate Charge		$Q_{G}$			85		nC
Gate to Source Charge		$Q_{GS}$	V <sub>GS</sub> =10V, V <sub>DD</sub> =50V,		15		nC
Gate to Drain Charge		$Q_{GD}$	I <sub>D</sub> =1.3A, I <sub>G</sub> =100μA 41			nC	
Turn-ON Delay Time		t <sub>D(ON)</sub>			35		ns
Rise Time			V <sub>GS</sub> =0~10V, V <sub>DD</sub> =30V,		320		ns
Turn-OFF Delay Time		t <sub>D(OFF)</sub>	I <sub>D</sub> =0.5A, R <sub>G</sub> =25Ω		210		ns
Fall-Time		t⊨			200		ns
SOURCE- DRAIN DIODE RATIN	IGS AND CI	HARACTERIS	TICS				
Maximum Body-Diode Continuous Current		ls				40	А
Maximum Body-Diode Pulsed Cu	rrent	I <sub>SM</sub>				160	А
Drain-Source Diode Forward Volt	Drain-Source Diode Forward Voltage		I <sub>S</sub> =40A, V <sub>GS</sub> =0V			1.48	V
Body Diode Reverse Recovery T	Body Diode Reverse Recovery Time		V <sub>GS</sub> =0V, I <sub>S</sub> =30A 150		150		ns
Body Diode Reverse Recovery Charge		$Q_RR$	dI <sub>F</sub> /d <sub>t</sub> =100A/µs		0.9		μC



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