



## 12N06Z

Power MOSFET

### 12A, 60V N-CHANNEL POWER MOSFET

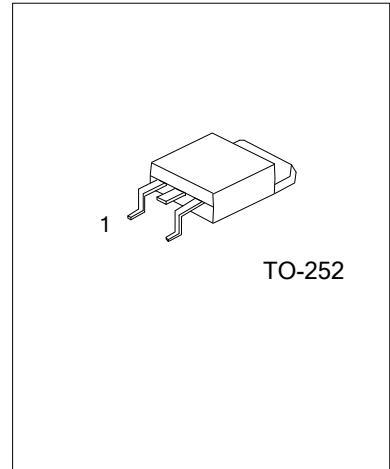
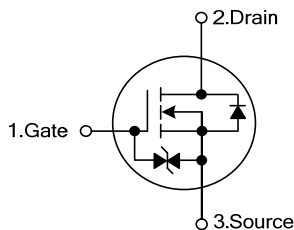
#### DESCRIPTION

The UTC **12N06Z** is an N-channel enhancement mode Power MOSFET using UTC' s advanced technology to provide customers with a minimum on-state resistance, high switching speed and low gate charge.

#### FEATURES

- \* 12A, 60V,  $R_{DS(on)} < 0.10\Omega @ V_{GS} = 10V$
- \* High switching speed
- \* Low gate charge
- \* Halogen Free

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
12N06ZL-TN3-R	12N06ZG-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>12N06ZL-TF3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) TN3: TO-252</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	60	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous $T_C = 25^\circ\text{C}$	$I_D$	12	A
	Pulsed	$I_{DM}$	48	A
Total Dissipation at $T_C = 25^\circ\text{C}$		$P_{TOT}$	30	W
Peak Diode Recovery dv/dt		dv/dt	15	V/ns
Avalanche Energy		$E_{AS}$	140	mJ
Junction Temperature		$T_J$	-55~+175	$^\circ\text{C}$
Storage Temperature Range		$T_{STG}$	-55~+175	$^\circ\text{C}$

Notes: 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.

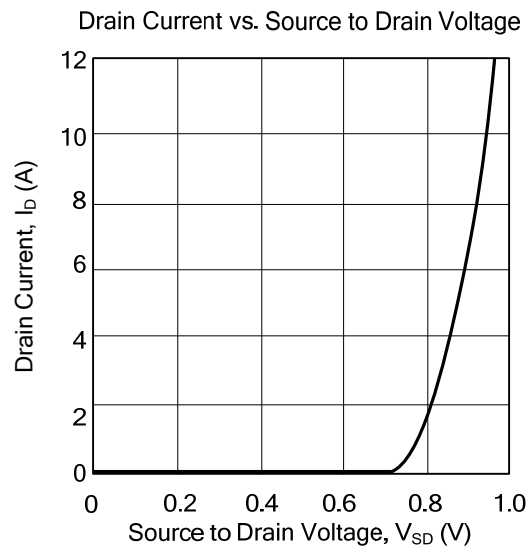
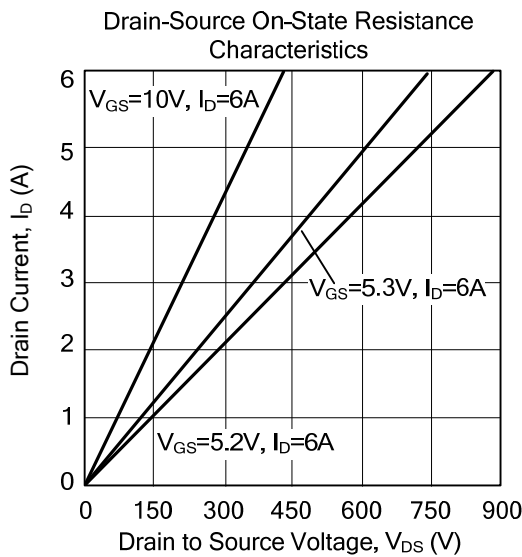
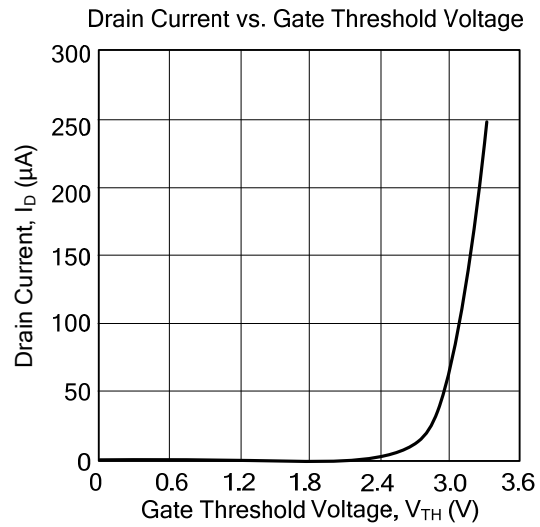
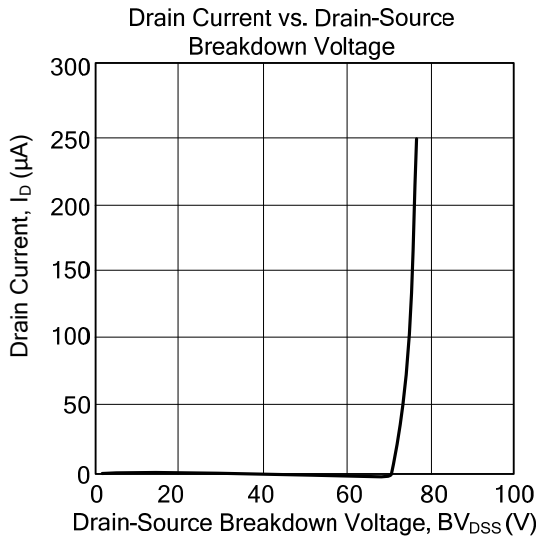
### ■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient Max	$\theta_{JA}$	100	$^\circ\text{C/W}$
Junction to Case Max	$\theta_{JC}$	5	$^\circ\text{C/W}$

### ■ ELECTRICAL CHARACTERISTICS ( $T_{CASE}=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\ \mu\text{A}$	60			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=60\text{V}$			1	$\mu\text{A}$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$			$\pm 10$	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1		3	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{DS}=10\text{V}, I_D=6\text{A}$		0.08	0.1	$\Omega$
On State Drain Current	$I_{D(ON)}$	$V_{GS}=10\text{V}, V_{DS}=1\text{V}$	5		30	A
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS}=25\text{V}, f=1\text{MHz}, V_{GS}=0\text{V}$		350		pF
Output Capacitance	$C_{OSS}$			75		pF
Reverse Transfer Capacitance	$C_{RSS}$			30		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=5\text{V}, I_D=12\text{A}, V_{DD}=48\text{V}$		7.5	10	nC
Gate to Source Charge	$Q_{GS}$			2.5		nC
Gate to Drain Charge	$Q_{GD}$			3.0		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=30\text{V}, I_D=6\text{A}, R_G=4.7\Omega, V_{GS}=0\sim 10\text{V}$		10		ns
Rise Time	$t_R$			35		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20		ns
Fall-Time	$t_F$			13		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Body-Diode Continuous Current	$I_S$				12	A
Maximum Body-Diode Pulsed Current	$I_{SM}$				48	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=12\text{A}$			1.5	V

### TYPICAL CHARACTERISTICS



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