



UF9Z24

Power MOSFET

**12A, 55V P-CHANNEL
POWER MOSFET**

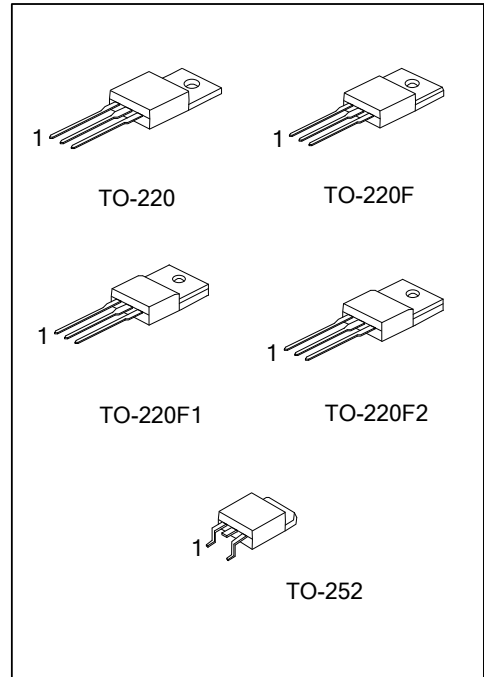
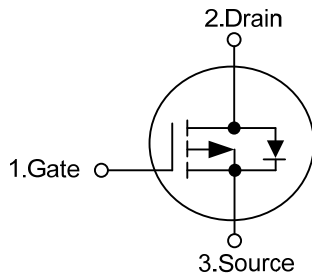
■ **DESCRIPTION**

The UTC **UF9Z24** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

■ **FEATURES**

- * $R_{DS(ON)} < 175m\Omega$ @ $V_{GS} = -10V, I_D = -12A$
- * High Switching Speed

■ **SYMBOL**



■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF9Z24L-TA3-T	UF9Z24G-TA3-T	TO-220	G	D	S	Tube
UF9Z24L-TF3-T	UF9Z24G-TF3-T	TO-220F	G	D	S	Tube
UF9Z24L-TF1-T	UF9Z24G-TF1-T	TO-220F1	G	D	S	Tube
UF9Z24L-TF2-T	UF9Z24G-TF2-T	TO-220F2	G	D	S	Tube
UF9Z24L-TN3-T	UF9Z24G-TN3-T	TO-252	G	D	S	Tube
UF9Z24L-TN3-R	UF9Z24G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UF9Z24L-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TN3: TO-252 (3) L: Lead Free, G: Halogen Free</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-55	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	Continuous $T_C=25^\circ\text{C}$	I_D	-12	A
	Pulsed	I_{DM}	-48	A
Single Pulsed Avalanche Current (L=0.1mH)		I_{AS}	-7.2	A
Single Pulsed Avalanche Energy (L=0.1mH)(Note 1)		E_{AS}	96	mJ
Power Dissipation	TO-220	P_D	38	W
	TO-220F/TO-220F1		23	W
	TO-220F2		25	W
	TO-252		27	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2	θ_{JA}	62	$^\circ\text{C/W}$
	TO-252		110	$^\circ\text{C/W}$
	TO-220		3.3	$^\circ\text{C/W}$
Junction to Case	TO-220F/TO-220F1	θ_{JC}	5.5	$^\circ\text{C/W}$
	TO-220F2		5	$^\circ\text{C/W}$
	TO-252		4.6	$^\circ\text{C/W}$
	TO-220		3.3	$^\circ\text{C/W}$

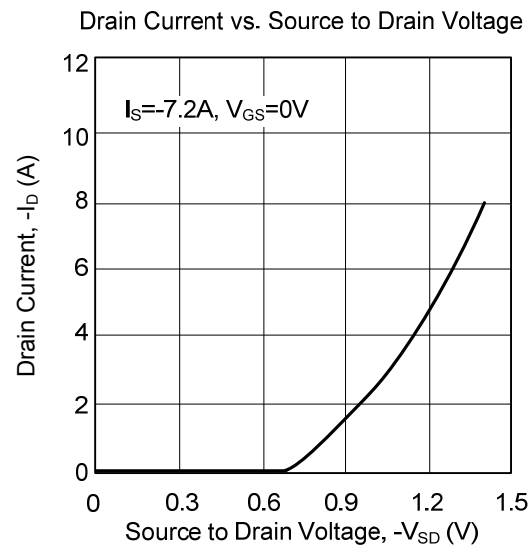
Notes: 1. Duty cycle $\leq 1\%$.

■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-55			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-55V, V _{GS} =0V			-25	μA
Gate-Source Leakage Current	Forward	I _{GSS} V _{GS} =+20V			+100	nA
	Reverse		V _{GS} =-20V			-100
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-2.0		-4.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-12A (Note 1)			0.175	Ω
On State Drain Current (Note 1)	I _{D(ON)}	V _{GS} =-10V, V _{DS} =-5V	-12			A
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz (Note 2)		350		pF
Output Capacitance	C _{OSS}			170		pF
Reverse Transfer Capacitance	C _{RSS}			92		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =-10V, V _{DS} =-44V, I _D =-7.2A (Note 3)		52		nC
Gate to Source Charge	Q _{GS}			6.6		nC
Gate to Drain Charge	Q _{GD}			12		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =-28V, I _D =-7.2A, R _G =24Ω , R _D =3.7Ω (Note 3)		13		ns
Rise Time	t _R			55		ns
Turn-OFF Delay Time	t _{D(OFF)}			23		ns
Fall-Time	t _F			37		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 2)						
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 _F =-12A, V _{GS} =0V (Note 1)			-1.6	V

- Notes: 1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
 2. Guaranteed by design, not subject to production testing.
 3. Independent of operating temperature.

■ TYPICAL CHARACTERISTICS



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