



UF9Z24

Power MOSFET

12A, 55V P-CHANNEL POWER MOSFET

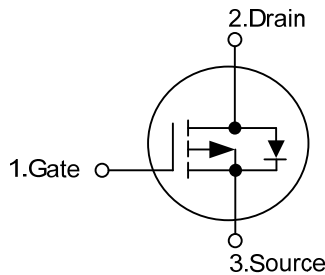
DESCRIPTION

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

- * $R_{DS(ON)} \leq 0.175 \Omega @ V_{GS} = -10V, I_D = -12A$
- * High Switching Speed

SYMBOL

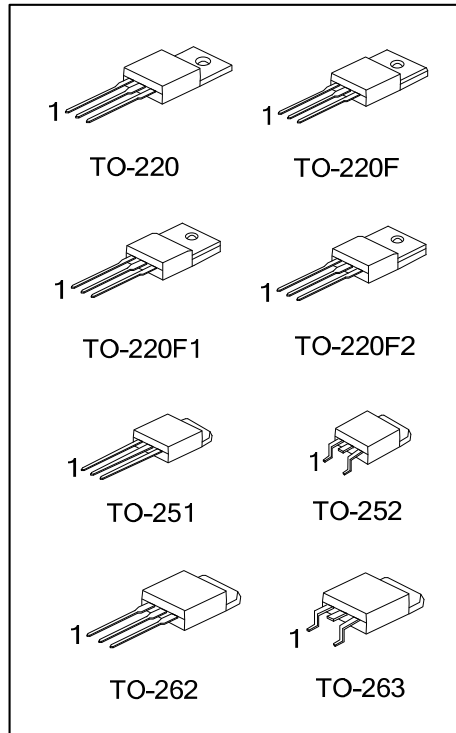


ORDERING INFORMATION

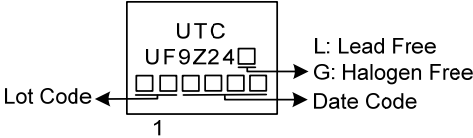
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF9Z24L-TA3-T	UF9Z24G-TA3-T	TO-220	G	D	S	Tube
UF9Z24L-TF3-T	UF9Z24G-TF3-T	TO-220F	G	D	S	Tube
UF9Z24L-TF1-T	UF9Z24G-TF1-T	TO-220F1	G	D	S	Tube
UF9Z24L-TF2-T	UF9Z24G-TF2-T	TO-220F2	G	D	S	Tube
UF9Z24L-TM3-T	UF9Z24G-TM3-T	TO-251	G	D	S	Tube
UF9Z24L-TN3-R	UF9Z24G-TN3-R	TO-252	G	D	S	Tape Reel
UF9Z24L-T2Q-T	UF9Z24G-T2Q-T	TO-262	G	D	S	Tube
UF9Z24L-T2Q-R	UF9Z24G-T2Q-R	TO-262	G	D	S	Tape Reel
UF9Z24L-TQ2-T	UF9Z24G-TQ2-T	TO-263	G	D	S	Tube
UF9Z24L-TQ2-R	UF9Z24G-TQ2-R	TO-263	G	D	S	Tape Reel

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

<p>UF9Z24G-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF1: TO-220F1, TF2: TO-220F2 TF3: TO-220F, TM3: TO-251, TN3: TO-252 T2Q: TO-262, TQ2: TO-263</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°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°C	I _D	-12	A
	Pulsed	I _{DM}	-48	A
Single Pulsed Avalanche Current (L=3.7mH)		I _{AS}	-7.2	A
Single Pulsed Avalanche Energy (L=3.7mH)(Note 1)		E _{AS}	96	mJ
Power Dissipation	TO-220/TO-262/TO-263	P _D	38	W
	TO-220F/TO-220F1		23	W
	TO-220F2		25	W
	TO-251/TO-252		27	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT		
Junction to Ambient	TO-220/TO-220F TO-220F1/TO-220F2 TO-262/TO-263	θ _{JA}	62	°C/W		
	TO-251/TO-252		110	°C/W		
	Junction to Case		TO-220/TO-262/TO-263	θ _{JC}	3.3	°C/W
			TO-220F/TO-220F1		5.5	°C/W
TO-220F2		5	°C/W			
TO-251/TO-252		4.6 (Note 1)	°C/W			

Notes: 1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

2. Duty cycle ≤ 1 %.

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

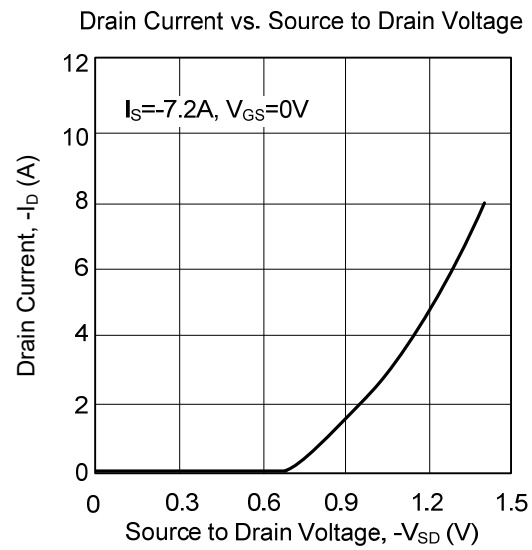
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-55			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-55V, V _{GS} =0V			-25	μA
Gate-Source Leakage Current	Forward	I _{GSS} V _{GS} =+20V			+100	nA
	Reverse		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} =-5.0V	-12			A
DYNAMIC PARAMETERS (Note 2)						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz (Note 2)		636		pF
Output Capacitance	C _{OSS}			175		pF
Reverse Transfer Capacitance	C _{RSS}			34		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{GS} =-10V, V _{DS} =-44V, I _D =-7.2A (Note 1,2,3)		10		nC
Gate to Source Charge	Q _{GS}			3.4		nC
Gate to Drain Charge	Q _{GD}			1.9		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =-28V, I _D =-7.2A, R _G =24Ω R _D =3.7Ω, V _{GS} =-10V (Note 1,2,3)		10		ns
Rise Time	t _R			25		ns
Turn-OFF Delay Time	t _{D(OFF)}			52		ns
Fall-Time	t _F			26		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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