



UF1010A

Power MOSFET

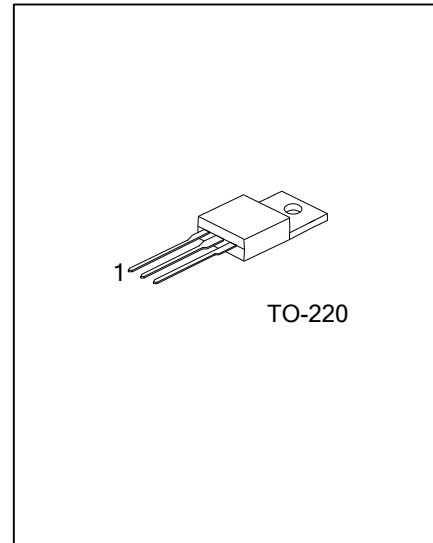
N-CHANNEL POWER MOSFET

DESCRIPTION

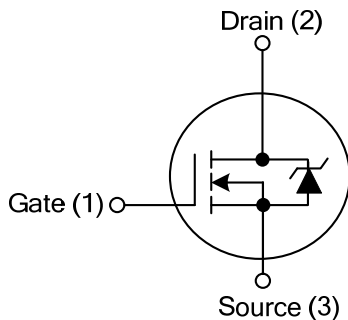
By using high technology, UTC **UF1010A** has the features, such as low $R_{DS(ON)}$, fast switching and low gate charge. Like features of all power MOSFET devices, UTC **UF1010A** can satisfy almost all the requirements of high efficient devices form customers.

FEATURES

- * $R_{DS(ON)} < 12 \text{ m}\Omega @ V_{GS} = 10\text{V}$
- * Ultra low gate charge : 130 nC
- * Low $C_{RSS} = 140 \text{ pF (typ.)}$
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability
- * High ruggedness



SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF1010AL-TA3-T	UF1010AG-TA3-T	TO-220	G	D	S	Tube

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

UF1010AL-TA3-T	(1)Packing Type	(1) T: Tube
	(2)Package Type	(2) TA3: TO-220
	(3)Lead Free	(3) G: Halogen Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Gate to Source Voltage		V _{GSS}	±20	V
Drain Current	Continuous (V _{GS} =10V)	I _D	84	A
	Pulsed (Note 2)	I _{DM}	330	
Avalanche Current (Note 2)		I _{AR}	50	A
Avalanche Energy	Repetitive (Note 2)	E _{AR}	17	mJ
	Single Pulsed (Note3)	E _{AS}	1180	mJ
Power Dissipation (T _C =25°C)		P _D	200	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. Pulse width limited by T_{J(MAX)}

3. T_J=25°C, L=260μH, R_G=25Ω, I_{AS}=50A

■ THERMAL DATA

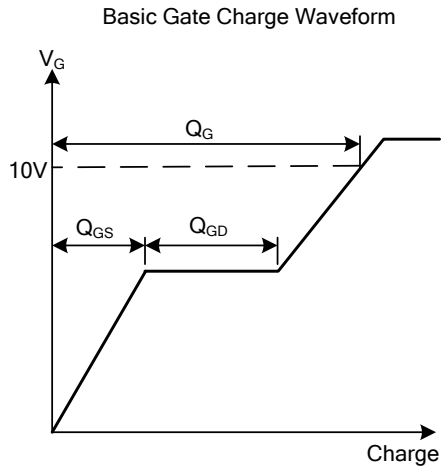
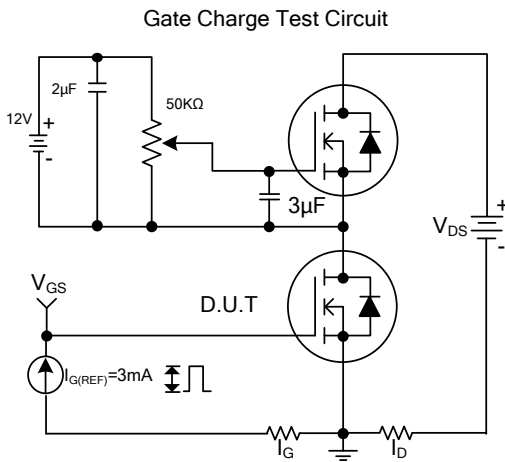
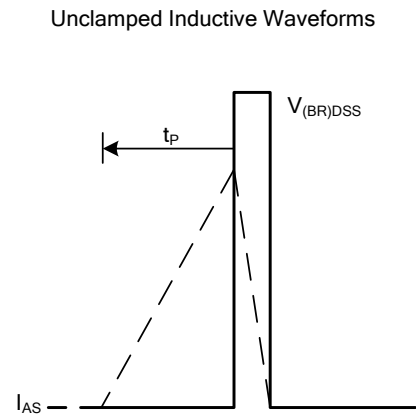
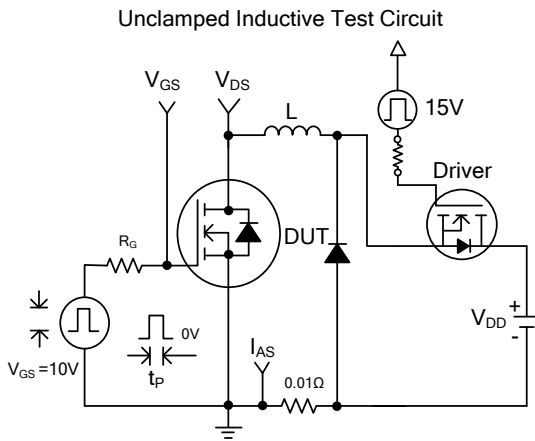
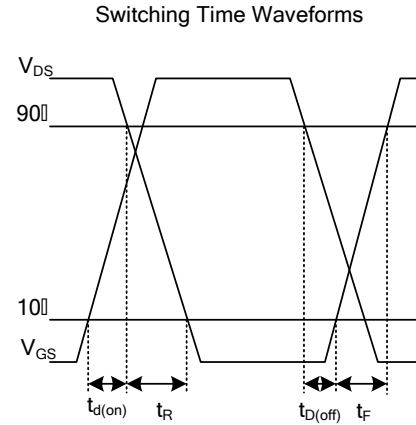
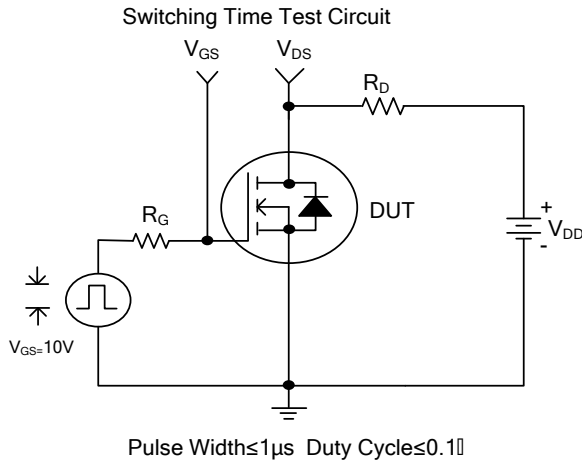
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	62	°C/W
Junction to Case	θ _{Jc}	0.75	°C/W

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

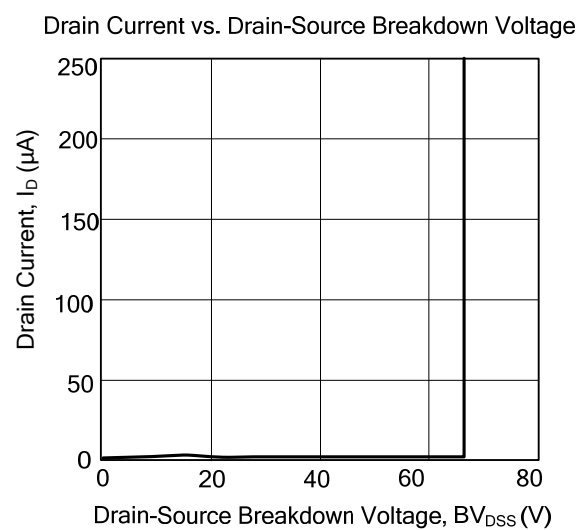
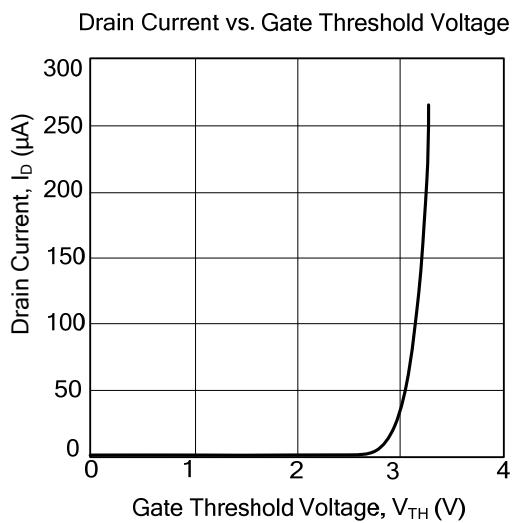
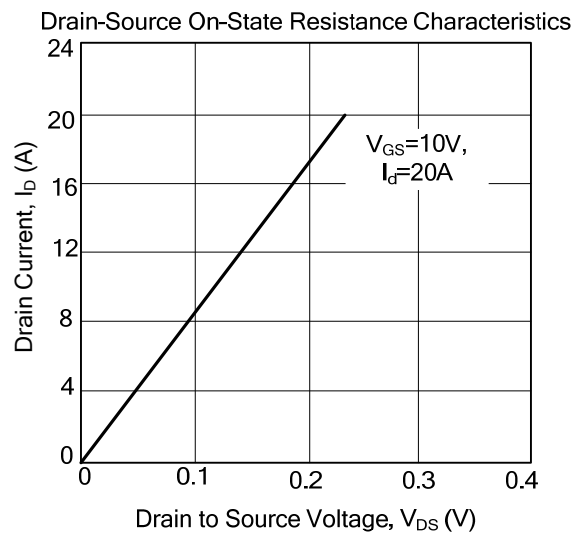
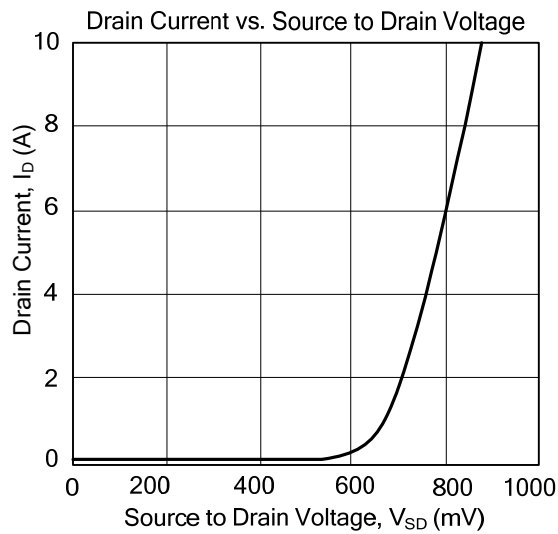
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250μA	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60 V, V _{GS} =0 V			25	μA
		V _{DS} =48 V, V _{GS} =0 V, T _J =150°C			250	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20 V, V _{DS} =0 V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA		0.064		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2.0		4.0	V
Static Drain-Source On Resistance(Note)	R _{DS(ON)}	V _{GS} =10 V, I _D =50A			12	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0 V, f=1MHz		3210		pF
Output Capacitance	C _{OSS}			690		pF
Reverse Transfer Capacitance	C _{RSS}			140		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	I _D =50A, V _{DS} =48V, V _{GS} =10V			130	nC
Gate-to-Source Charge	Q _{GS}				28	nC
Gate-to-Drain ("Miller") Charge	Q _{GD}				44	nC
Turn ON Delay Time	t _{D(ON)}	V _{DD} =30V, I _D =50A, R _G =3.6Ω V _{GS} = 10V		12		ns
Turn ON Rise Time	t _R			78		ns
Turn OFF Delay Time	t _{D(OFF)}			48		ns
Turn OFF Fall Time	t _F			53		ns
Internal Drain Inductance	L _D				4.5	
Internal Source Inductance	L _S			7.5		nH
Diode Forward Voltage	V _{SD}	T _J = 25°C, I _S = 50A, V _{GS} = 0V			1.3	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				84	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				330	A
Reverse Recovery Time	t _{RR}	T _J =25°C, I _F =50A,		73	110	ns
Reverse Recovery Charge	Q _{RR}	di/dt=100A/μs		220	330	nC

Note: Pulse width ≤ 400μs; duty cycle ≤ 2%.

TEST CIRCUITS AND WAVEFORMS



TYPICAL CHARACTERISTICS



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