



UF634-Q

Power MOSFET

8.1A, 250V N-CHANNEL POWER MOSFET

DESCRIPTION

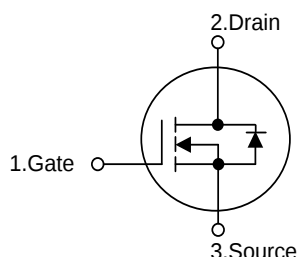
These kinds of N-channel power MOSFET field effect transistor have low conduction power loss, high input impedance, and high switching speed, Linear Transfer Characteristics, so can be use in a variety of power conversion applications.

The **UF634-Q** suitable for resonant and PWM converter topologies.

FEATURES

- * $R_{DS(ON)} \leq 0.55 \Omega$ @ $V_{GS}=10V$, $I_D=4.0A$
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability, high ruggedness

SYMBOL

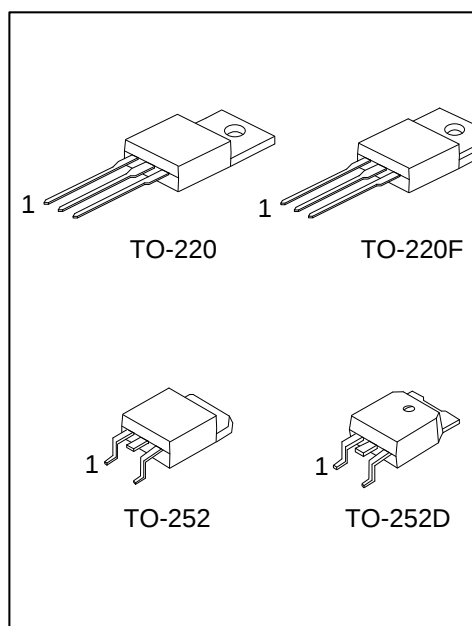


ORDERING INFORMATION

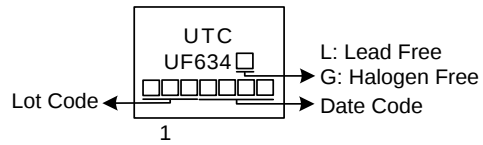
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen-Free		1	2	3	
UF634L-TA3-T	UF634G-TA3-T	TO-220	G	D	S	Tube
UF634L-TF3-T	UF634G-TF3-T	TO-220F	G	D	S	Tube
UF634L-TN3-R	UF634G-TN3-R	TO-252	G	D	S	Tape Reel
UF634L-TND-R	UF634G-TND-R	TO-252D	G	D	S	Tape Reel

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

UF634G-TA3-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF3: TO-220F, TN3: TO-252 TND: TO-252D (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



■ ABSOLUTE MAXIMUM RATING ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	250	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current		I_D	8.1	A
Pulsed Drain Current (Note 2)		I_{DM}	32.4	A
Single Pulse Avalanche Energy Rating (Note 2)		E_{AS}	140	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	6.67	V/ns
Maximum Power Dissipation	TO-220	P_D	70	W
	TO-220F		38	W
	TO-252/TO-252D		50	W
Junction Temperature		T_J	+150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

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.

3. $L=1.2\text{mH}$, $I_{AS}=11.8\text{A}$, $V_{DD}=50\text{V}$, $R_G=27\ \Omega$, Starting $T_J=25^\circ\text{C}$.

4. $I_{SD} \leq 8.1\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$.

■ THERMAL RESISTANCES CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F	θ_{JA}	62.5	$^\circ\text{C/W}$
	TO-252/TO-252D		110	$^\circ\text{C/W}$
Junction to Case	TO-220	θ_{JC}	1.01	$^\circ\text{C/W}$
	TO-220F		3.29	$^\circ\text{C/W}$
	TO-252/TO-252D		2.5	$^\circ\text{C/W}$

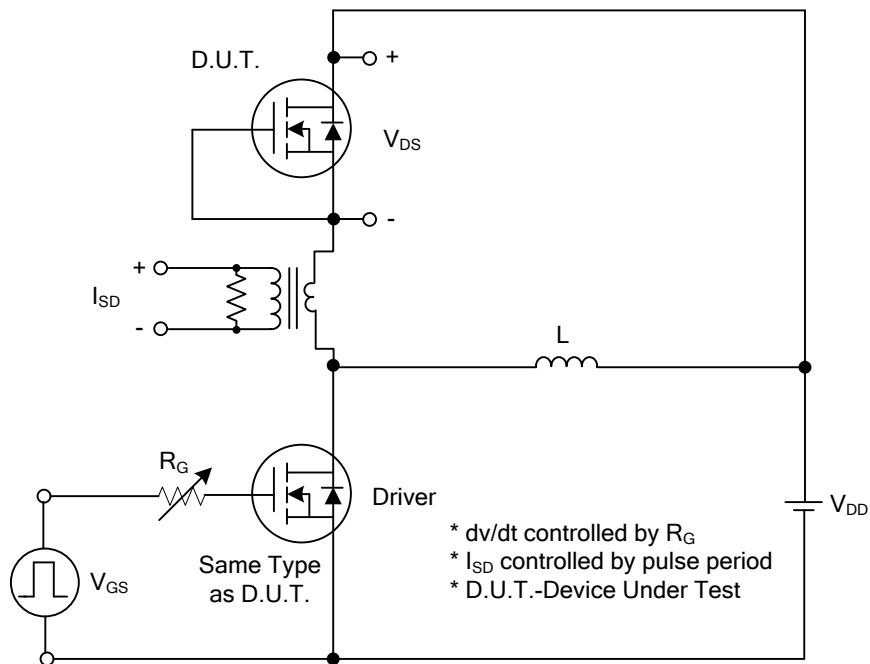
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	250			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 250V, V _{GS} = 0V			10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±30V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	2.0		4.0	V
Drain-Source On Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4.0A			0.55	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1MHz		450		pF
Output Capacitance	C _{OSS}			115		pF
Reverse Transfer Capacitance	C _{RSS}			41		pF
Gate Resistance	R _G	V _{DS} =0V, f =1MHz		1.5		Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =150V, V _{GS} =10V, I _D =7.0A (Note 1, 2)		34		nC
Gate Source Charge	Q _{GS}			3		nC
Gate Drain Charge	Q _{GD}			9		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =30V, V _{GS} =10V, I _D =7.0A, R _G =25Ω (Note 1, 2)		32		ns
Turn-ON Rise Time	t _{rr}			60		ns
Turn-OFF Delay Time	t _{D(OFF)}			160		ns
Turn-OFF Fall-Time	t _F			63		ns
SOURCE TO DRAIN DIODE SPECIFICATIONS						
Continuous Source Current (body diode)	I _S				8.1	A
Pulse Source Current (body diode) (Note)	I _{SM}				32.4	A
Diode Forward Voltage (Note)	V _{SD}	I _S =8.1A, V _{GS} =0V			1.4	V
Reverse Recovery Time	t _{rr}	I _S =8.1A, dI _S /dt=100A/μs		120		ns
Reverse Recovery Charge	Q _{rr}			0.3		μC

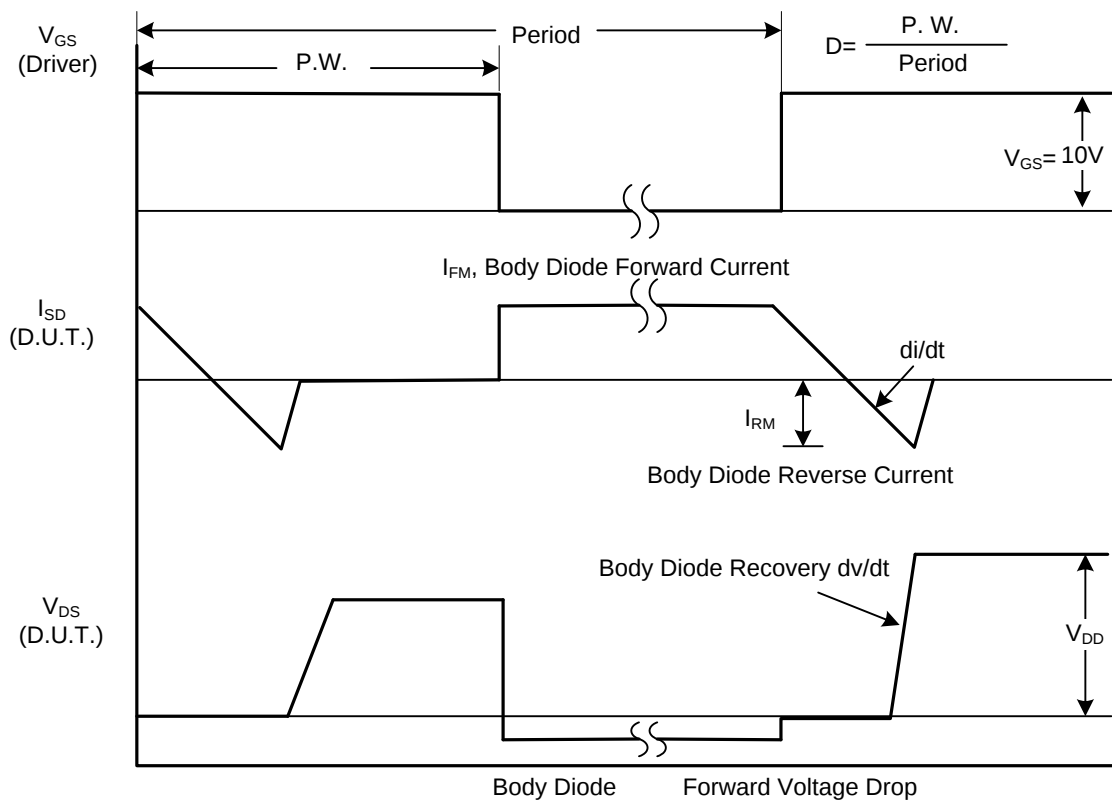
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

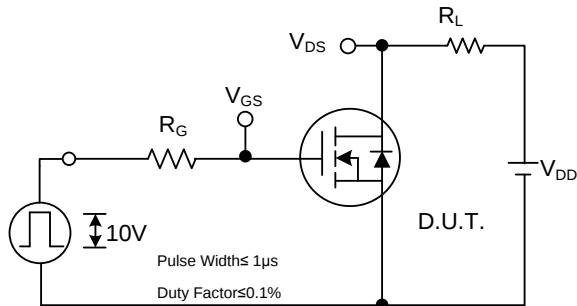


Peak Diode Recovery dv/dt Test Circuit

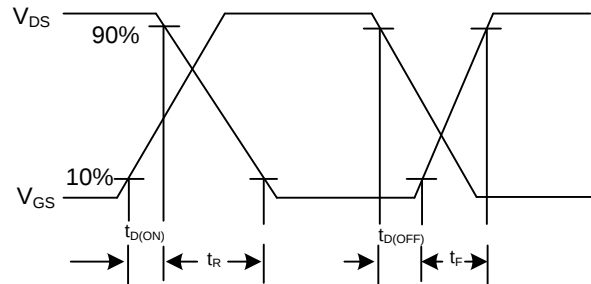


Peak Diode Recovery dv/dt Waveforms

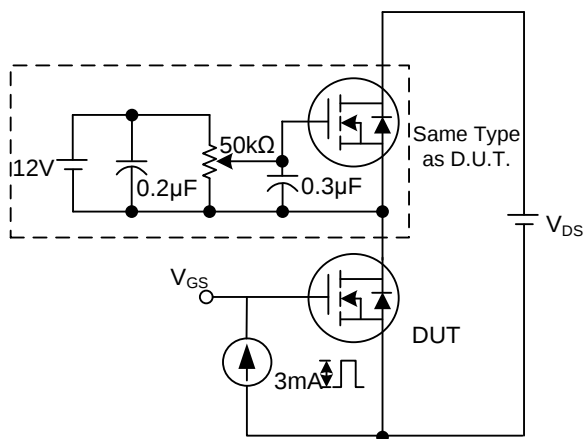
■ TEST CIRCUITS AND WAVEFORMS



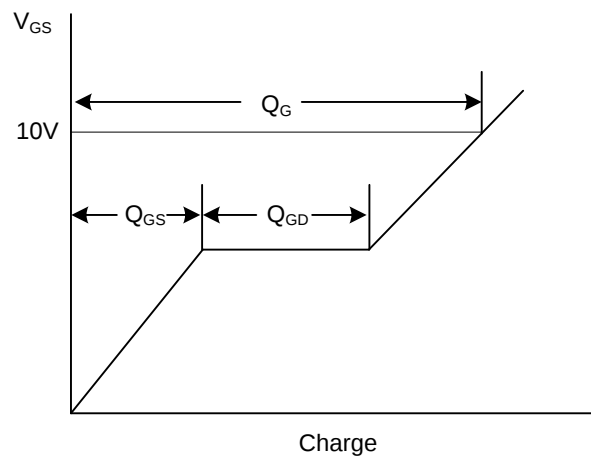
Switching Test Circuit



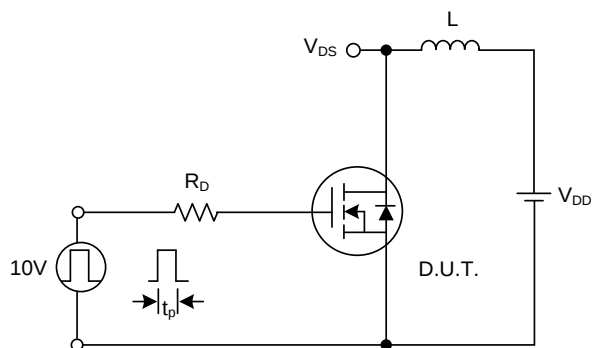
Switching Waveforms



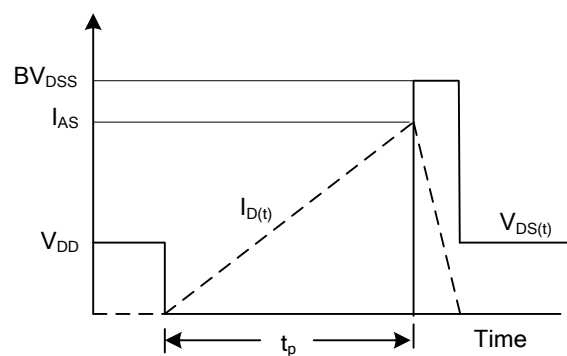
Gate Charge Test Circuit



Gate Charge Waveform

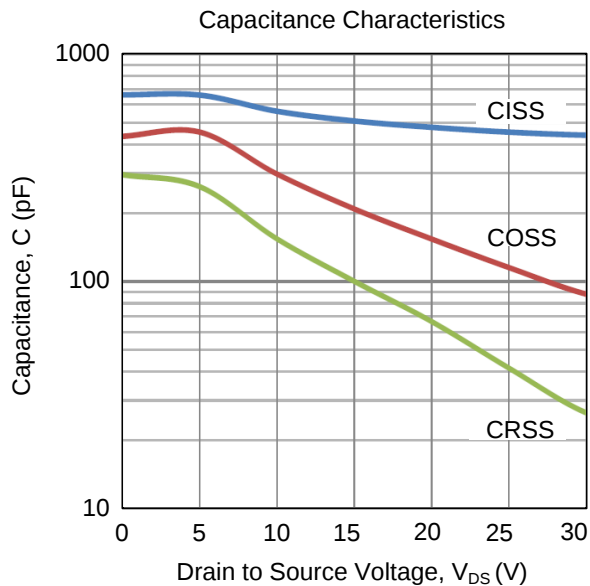


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



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