



UF5210

POWER MOSFET

-40A, -100V P-CHANNEL POWER MOSFET

DESCRIPTION

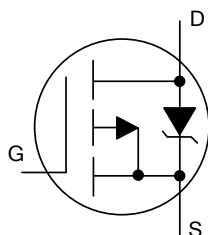
The UTC **UF5210** is a P-channel Power MOSFET, it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

The UTC **UF5210** is suitable for all commercial-industrial applications, etc.

FEATURES

- * $R_{DS(ON)} \leq 0.06 \Omega$ @ $V_{GS} = -10V$, $I_D = -24A$
- * High Switching Speed
- * Dynamic dv/dt Rating

SYMBOL



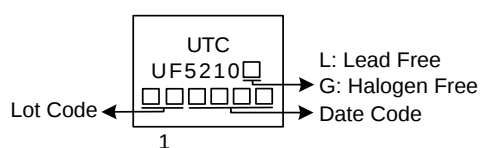
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF5210L-TA3-T	UF5210G-TA3-T	TO-220	G	D	S	Tube
UF5210L-TF3-T	UF5210G-TF3-T	TO-220F	G	D	S	Tube

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

UF5210G-TA3-T (1) Packing Type (2) Package Type (3) Green Package	(1) T: Tube (2) TA3: TO-220, TF3: TO-220F (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}	-100	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous	V _{GS} =-10V	I _D	-40	A
	Pulsed (Note 2)		I _{DM}	-120	A
Avalanche Energy	Single Pulse (Note 3)		E _{AS}	210	mJ
Peak Diode Recovery dv/dt (Note 4)			dv/dt	25	V/ns
Power Dissipation		TO-220	P _D	200	W
		TO-220F		60	W
Junction Temperature			T _J	-55 ~ +150	°C
Storage Temperature Range			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.

3. $L=0.1\text{ mH}$, $I_{AS}=-35\text{A}$, $V_{DD}=-50\text{V}$, $R_G=25\ \Omega$, Starting $T_J = 25^{\circ}\text{C}$

4. $I_{SD} \leq -30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DS}$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		θ_{JA}	62.5	$^{\circ}\text{C/W}$
Junction to Case	TO-220	θ_{JC}	0.75	$^{\circ}\text{C/W}$
	TO-220F		2.1	$^{\circ}\text{C/W}$

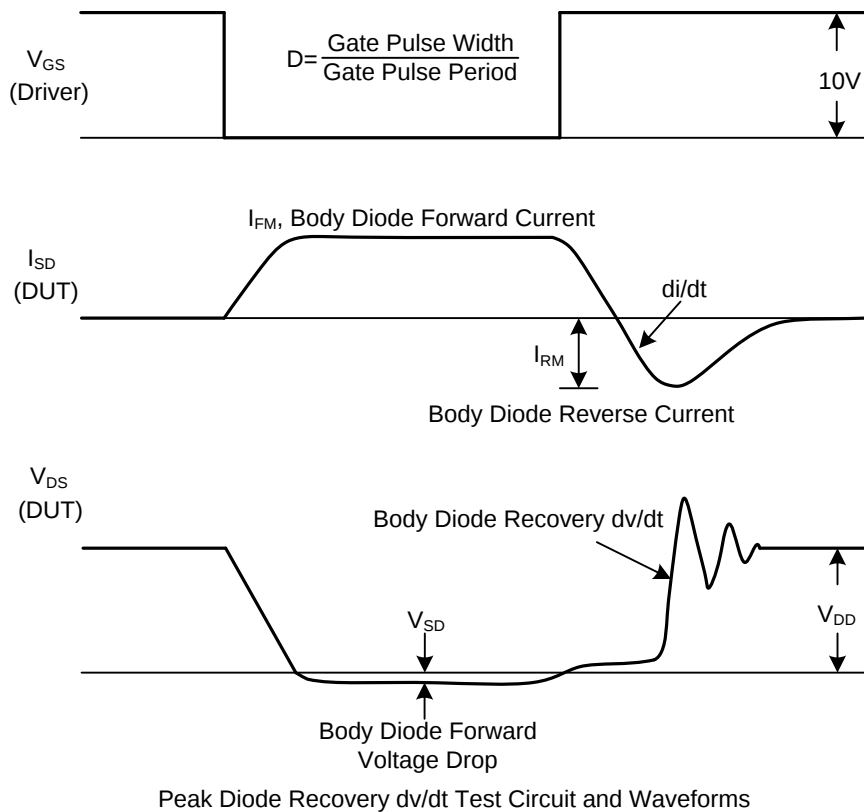
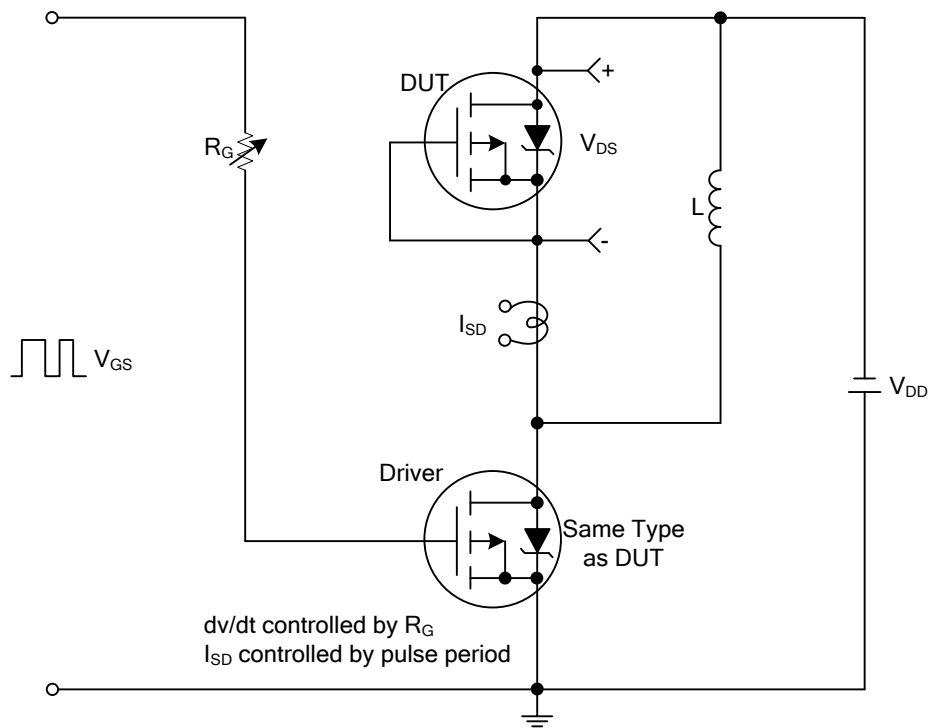
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =-250μA	-100			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-100V, V _{GS} =0V			-25	μA
			V _{DS} =-80V, V _{GS} =0V, T _J =150°C			-250	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V, V _{DS} =0V			100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Static Drain-to-Source On-Resistance		R _{DS(ON)}	V _{GS} =-10V, I _D =-24A (Note 2)			0.06	Ω
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-2.0		-4.0	V
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		3300		pF
Output Capacitance		C _{OSS}			550		pF
Reverse Transfer Capacitance		C _{RSS}			110		pF
SWITCHING PARAMETERS							
Total Gate Charge (Note 1)		Q _G	V _{DS} =-80V, V _{GS} =-10V, I _D =-40A I _G =-1mA (Note 1, 2)		85		nC
Gate-to-Source Charge		Q _{GS}			22		nC
Gate-to-Drain ("Miller") Charge		Q _{GD}			18		nC
Turn-ON Delay Time (Note 1)		t _{D(ON)}	V _{DD} =-40V, V _{GS} =-10Ω, I _D =-40A, R _G =6Ω (Note 1, 2)		15.2		ns
Rise Time		t _R			8.8		ns
Turn-OFF Delay Time		t _{D(OFF)}			74		ns
Fall Time		t _F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				-40	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				-120	A
Drain-Source Diode Forward Voltage (Note 1)		V _{SD}	I _S =-30A, V _{GS} =0V			-1.6	V
Body Diode Reverse Recovery Time		t _{rr}	I _F =-30A, di/dt=-100A/μs, V _{GS} =0V		170		ns
Body Diode Reverse Recovery Charge		Q _{rr}			0.7		μC

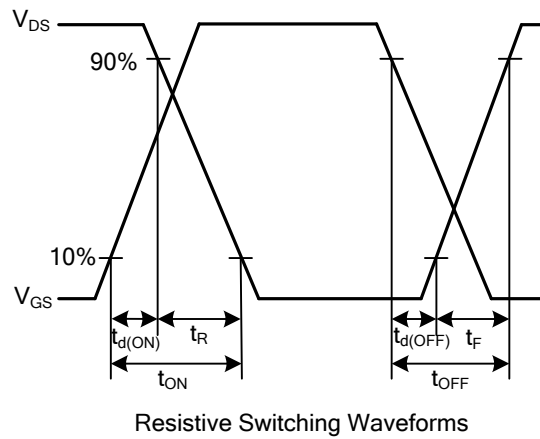
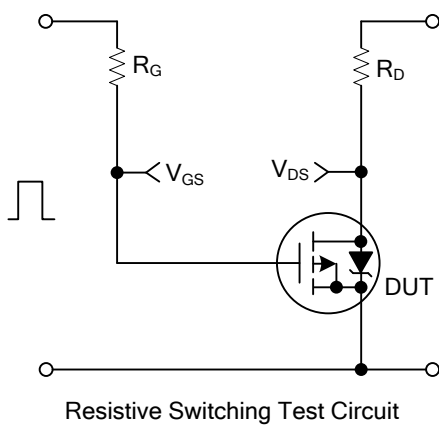
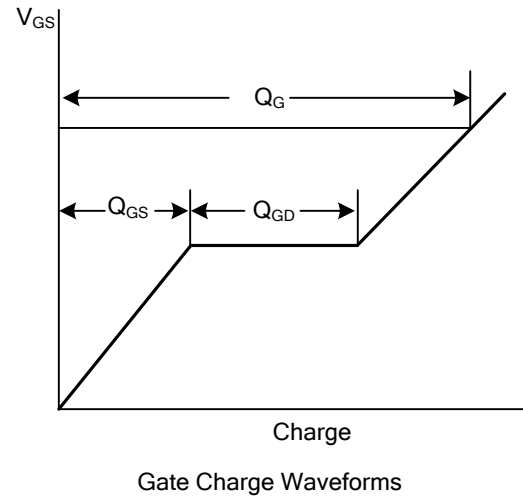
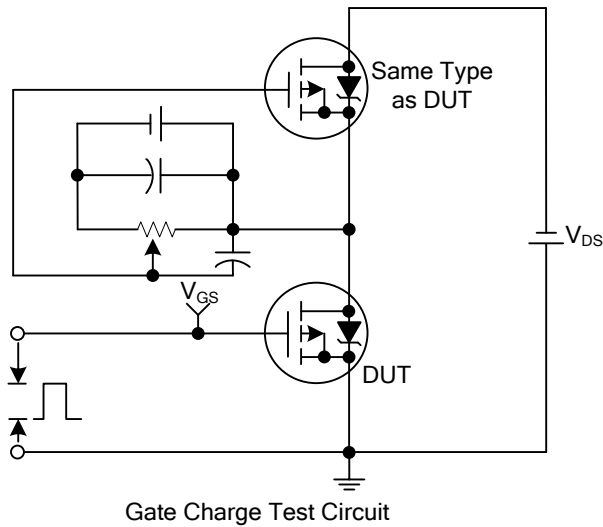
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

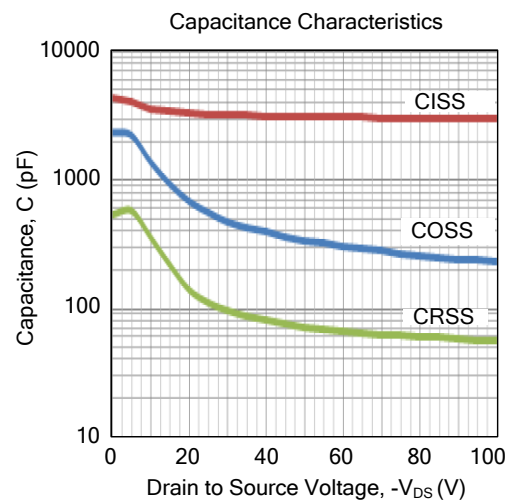
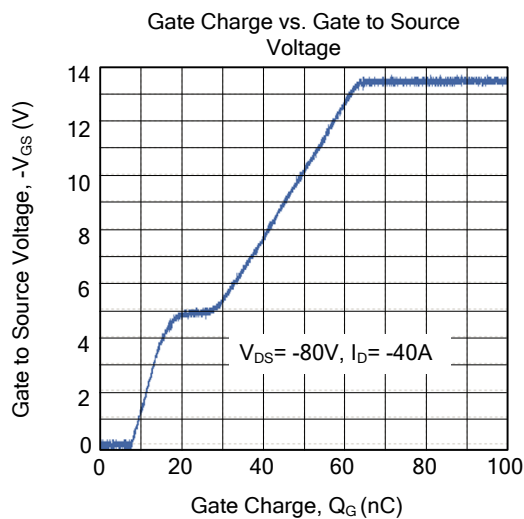
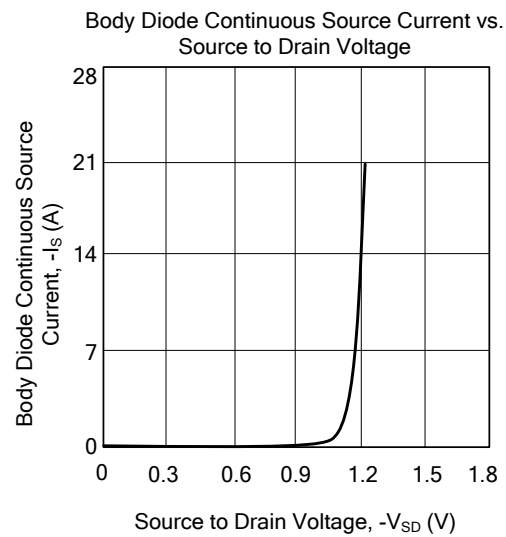
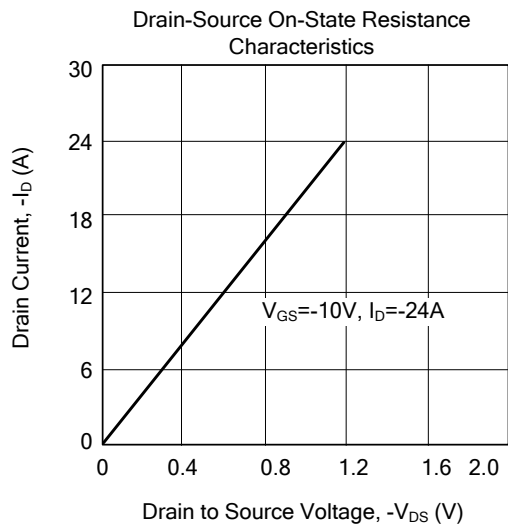
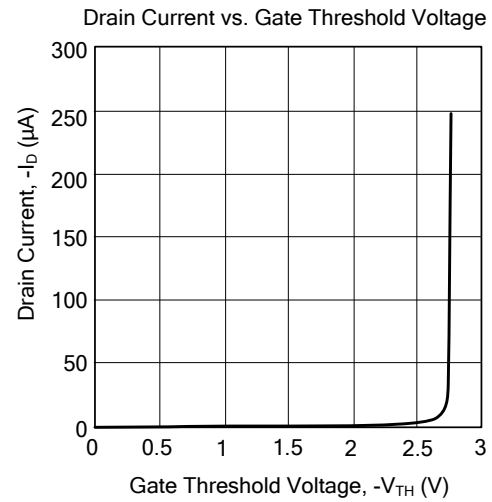
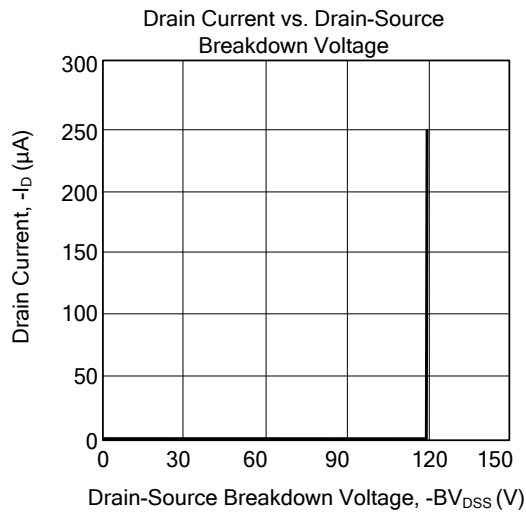
■ TEST CIRCUITS AND WAVEFORMS



■ TEST CIRCUITS AND WAVEFORMS



TYPICAL CHARACTERISTICS



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