



UT8P03M

POWER MOSFET

-8A, -30V P-CHANNEL POWER MOSFET

DESCRIPTION

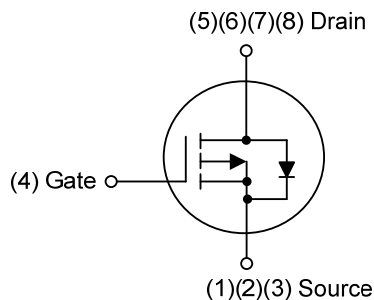
The UTC **UT8P03M** is a P-channel MOS Field Effect Transistor. it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

The UTC **UT8P03M** is suitable for high voltage switching applications.

FEATURES

- * $R_{DS(ON)} \leq 45 \text{ m}\Omega$ @ $V_{GS} = -10\text{V}$, $I_D = -4.0\text{A}$
- $R_{DS(ON)} \leq 70 \text{ m}\Omega$ @ $V_{GS} = -4.5\text{V}$, $I_D = -4.0\text{A}$
- * High switching speed
- * Low input capacitance

SYMBOL

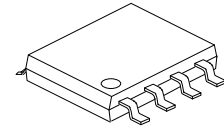


ORDERING INFORMATION

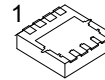
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT8P03ML-S08-R	UT8P03MG-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
UT8P03ML-P3030-R	UT8P03MG-P3030-R	PDFN3×3	S	S	S	G	D	D	D	D	Tape Reel

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

UT8P03MG-S08-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) S08: SOP-8, P3030: PDFN3×3 (3) G: Halogen Free and Lead Free, L: Lead Free
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SOP-8



PDFN3×3

■ MARKING

SOP-8	PDFN3x3
UTC → Date Code L: Lead Free G: Halogen Free UT8P03M → Lot Code	UT 8P03M • → Date Code

■ ABSOLUTE MAXIMUM RATING (T_C=25°C unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	-30	V
Gate-Source Voltage		V _{GSS}	±20	V
Drain Current	DC	I _D	-8	A
	Pulsed (Note 2)	I _{DM}	-16	A
Avalanche Energy (Note 3)	Single Pulsed (Note 3)	E _{AS}	37	mJ
Power Dissipation	SOP-8	P _D	1.5	W
	PDFN3×3		50	W
Junction Temperature		T _J	+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=0.1mH, I_{AS}=-27.5A, V_{DD}=-20V, R_G = 25Ω, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-8	θ _{JA}	90 (Note)	°C/W
	PDFN3×3		41.6 (Note)	°C/W

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

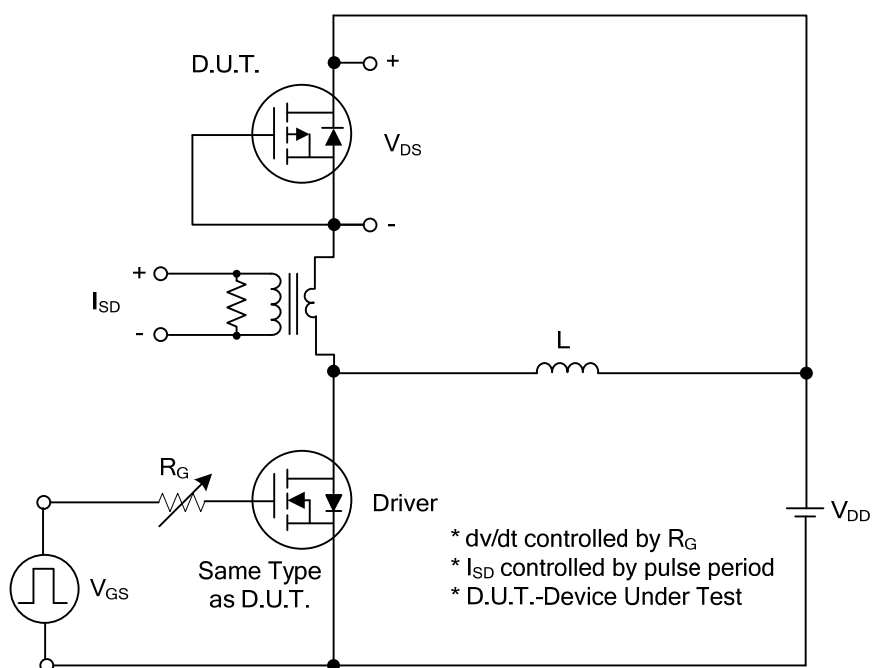
■ ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-1	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+10	μA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-10	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} = V _{GS} , I _D =-250μA	-1.0		-3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =-10V, I _D =-4.0A			45	mΩ
			V _{GS} =-4.5V, I _D =-4.0A			70	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz		840		pF
Output Capacitance		C _{OSS}			160		pF
Reverse Transfer Capacitance		C _{RSS}			140		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =-24V, V _{GS} =-10V, I _D =-8A, I _D =-1mA (Note 1, 2)		24		nC
Gate to Source Charge		Q _{GS}			2.8		nC
Gate to Drain Charge		Q _{GD}			5.2		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =-15V, V _{GS} =-10V, I _D =-8A, R _G =3Ω (Note 1, 2)		3		ns
Rise Time		t _R			17		ns
Turn-OFF Delay Time		t _{D(OFF)}			27		ns
Fall-Time		t _F			20		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I _S				-8	A
Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}				-16	A
Diode Forward Voltage		V _{SD}	I _F =-8A, V _{GS} =0V			-1.6	V

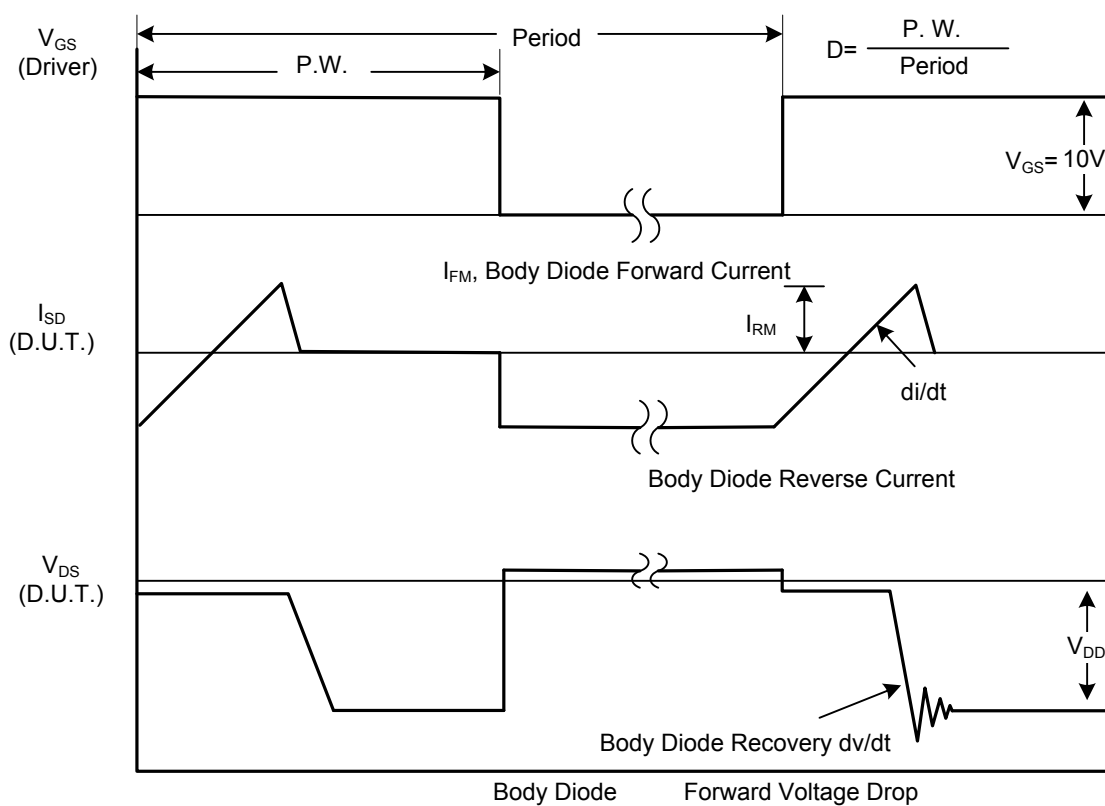
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

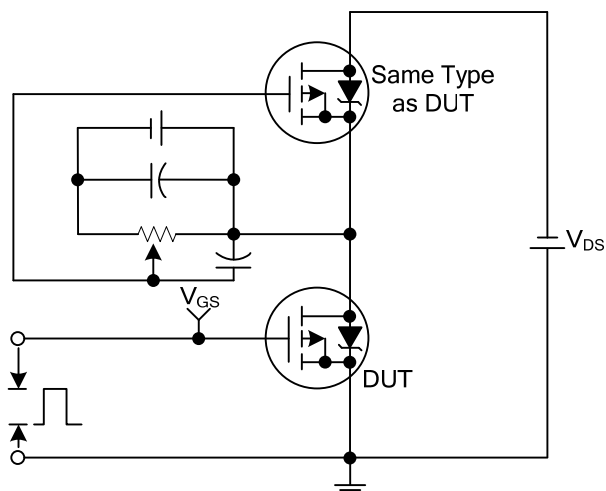


Peak Diode Recovery dv/dt Test Circuit

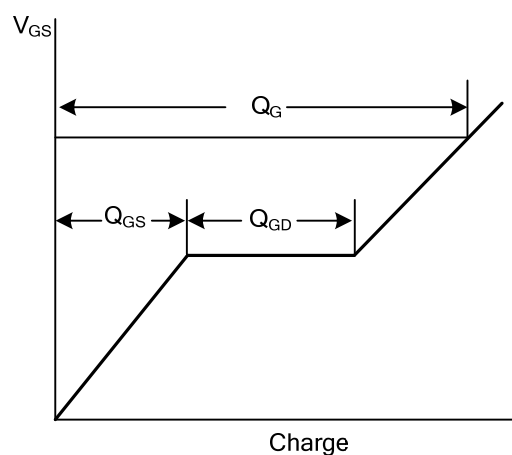


Peak Diode Recovery dv/dt Waveforms

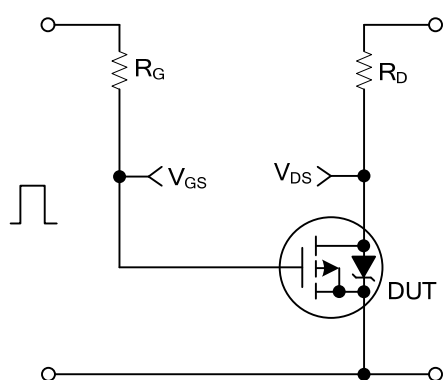
■ TEST CIRCUITS AND WAVEFORMS



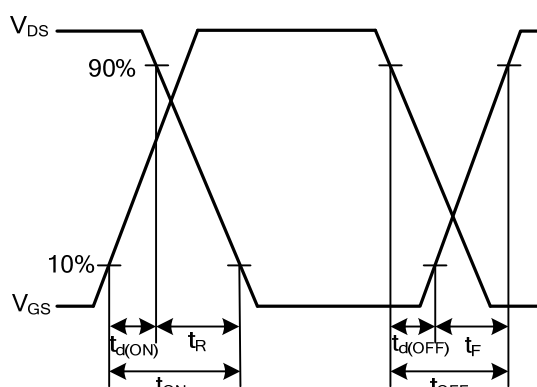
Gate Charge Test Circuit



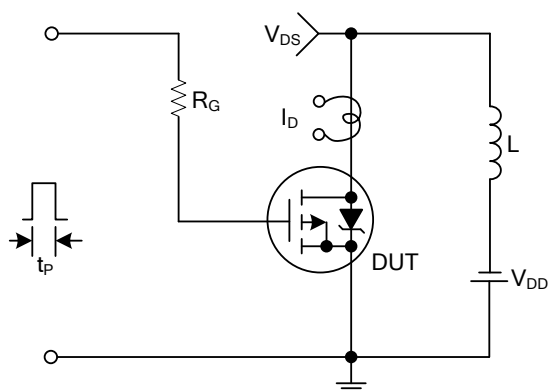
Gate Charge Waveforms



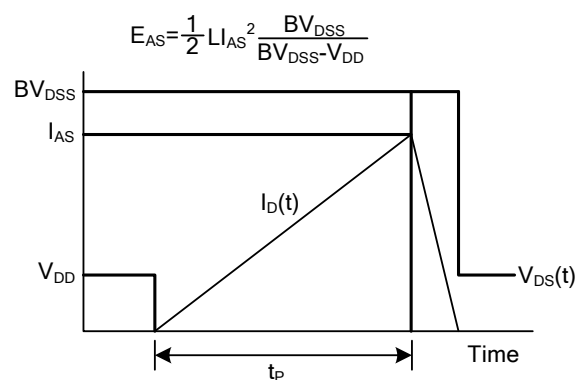
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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