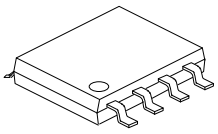
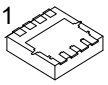
UT8P03M

POWER MOSFET

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



SOP-8



PDFN3×3

■ DESCRIPTION

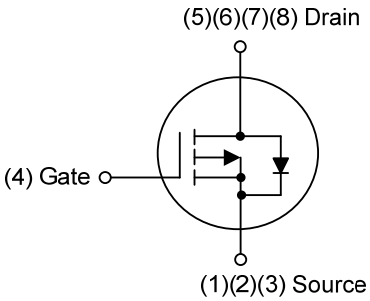
The UTC **UT8P03M** is a P-channel MOS Field Effect Transistor. it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

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

■ FEATURES

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

■ SYMBOL



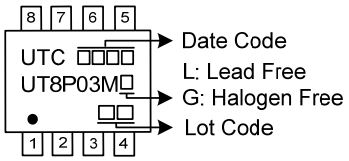
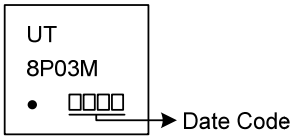
■ ORDERING INFORMATION

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

■ MARKING

SOP-8	PDFN3×3
	

■ 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

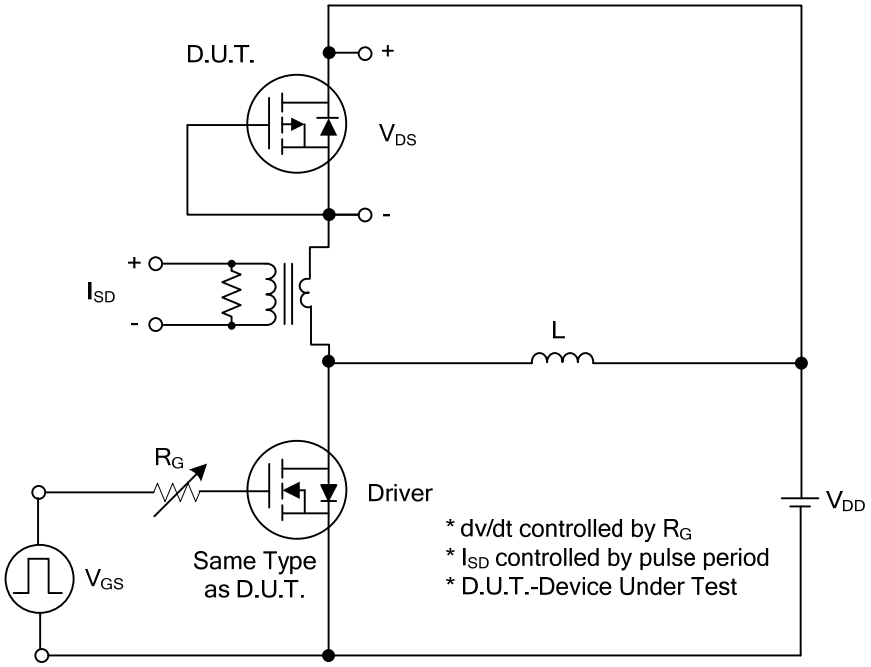
Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

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

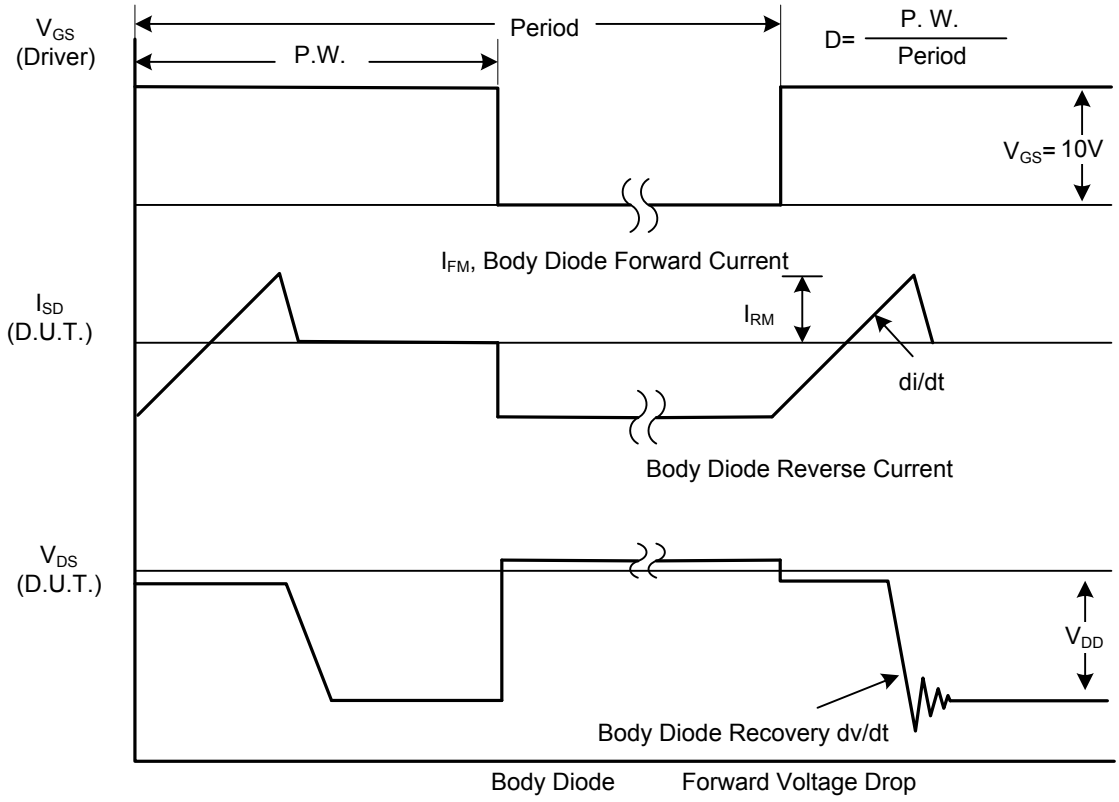
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+10	μA
	Reverse		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

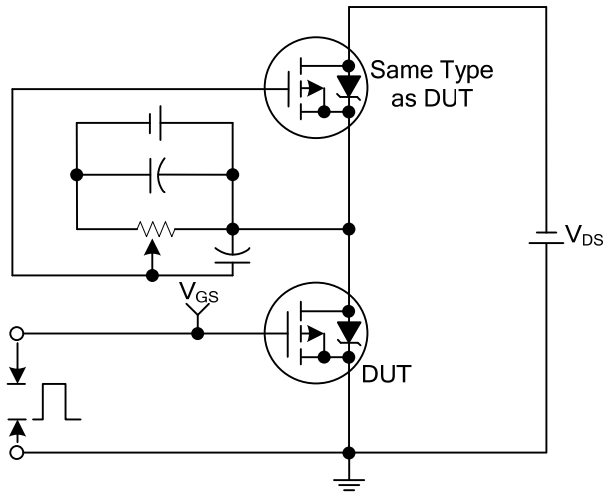


Peak Diode Recovery dv/dt Test Circuit

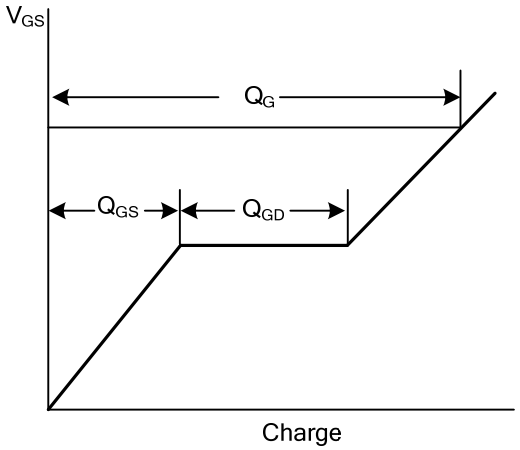


Peak Diode Recovery dv/dt Waveforms

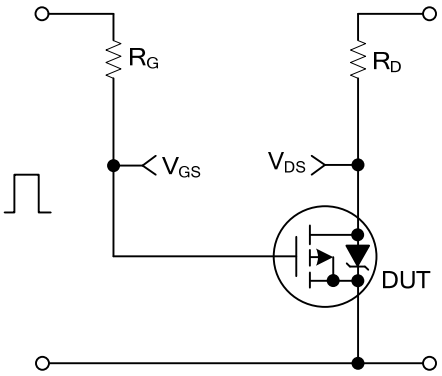
■ TEST CIRCUITS AND WAVEFORMS



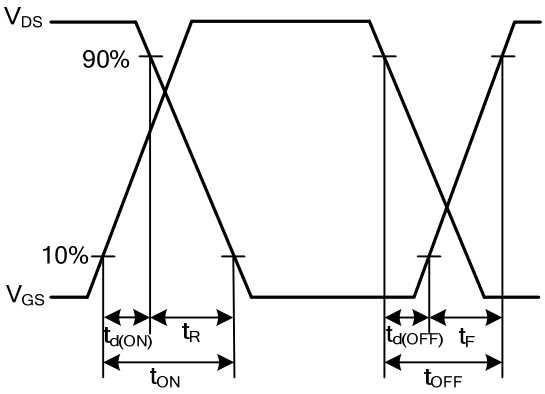
Gate Charge Test Circuit



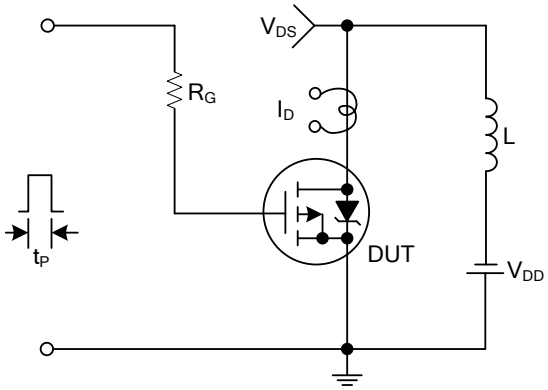
Gate Charge Waveforms



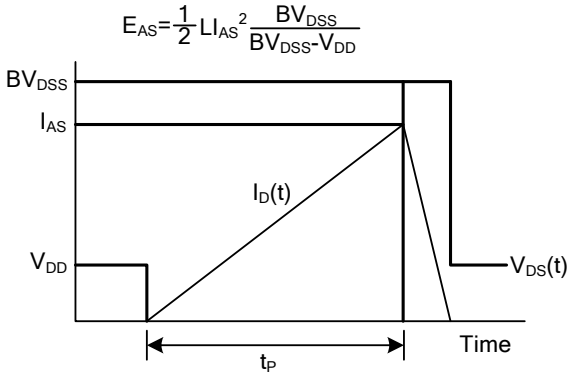
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms