UTC UNISONIC TECHNOLOGIES CO., LTD

UT02P06 **POWER MOSFET**

-0.2A, -60V P-CHANNEL **POWER MOSFET**

DESCRIPTION

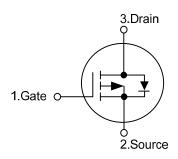
The UTC UT02P06 is a P-channel MOS Field Effect Transistor, it uses UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance.

The UTC UT02P06 is suitable for high voltage switching applications.

FEATURES

- * $R_{DS(ON)} \le 4.0 \Omega$ @ V_{GS} =-10V, I_D =-0.1A $R_{DS(ON)} \le 6.0 \Omega @ V_{GS} = -4.5 V, I_D = -0.1 A$
- * High switching speed
- * Low input capacitance

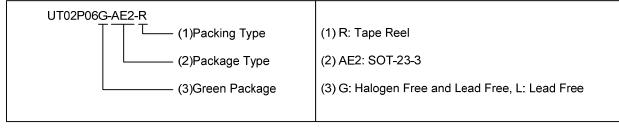
SYMBOL



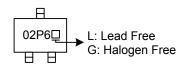
ORDERING INFORMATION

Ordering Number		Daalaasa	Pin Assignment			Da aldia a	
Lead Free	Halogen Free	Package	1	2	3	Packing	
UT02P06L-AE2-R	UT02P06G-AE2-R	SOT-23-3	G	S	D	Tape Reel	

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



MARKING



SOT-23-3 (JEDEC TO-236)

www.unisonic.com.tw 1 of 7 UT02P06 POWER MOSFET

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC	I _D	-0.2	Α
	Pulsed (Note 2)	I _{DM}	-0.4	Α
Power Dissipation (T _A =25°C)		P_{D}	0.2	W
Junction Temperature		TJ	+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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	625	°C/W

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

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

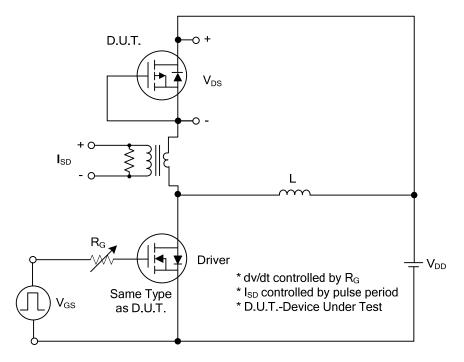
PARAMETER	SYMBOL	TEST CONDITIONS N		TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA				V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V			-1	μΑ
Forward		V _{GS} =+20V, V _{DS} =0V			+10	μΑ
Gate-Source Leakage Current Reverse	I _{GSS}	V _{GS} =-20V, V _{DS} =0V			-10	μΑ
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu A$			-3.0	V
Ctatia Dunin Caurea On State Desistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-0.1A			4.0	Ω
Static Drain-Source On-State Resistance		V _{GS} =-4.5V, I _D =-0.1A			6.0	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}			28		pF
Output Capacitance	Coss	V _{GS} =0V, V _{DS} =-10V, f=1.0MHz		7		pF
Reverse Transfer Capacitance	C_{RSS}			4		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	\\ - 40\\ \\ - 10\\ \\ - 0.24		7		nC
Gate to Source Charge	Q_GS	V_{DS} =-48V, V_{GS} =-10V, I_{D} =-0.2A, I_{D} =-1mA (Note 1, 2)		1		nC
Gate to Drain Charge	Q_GD	ID=-IIIIA (Note 1, 2)		0.6		nC
Turn-ON Delay Time	t _{D(ON)}			2		ns
Rise Time	t _R	V_{DS} =-30V, V_{GS} =-10V, I_{D} =-0.2A,		19		ns
Turn-OFF Delay Time	t _{D(OFF)}	R _G =3Ω (Note 1, 2)		7		ns
Fall-Time	t⊧			30		ns
SOURCE-DRAIN DIODE RATINGS AND	CHARACTER	ISTICS				
Maximum Continuous Drain-Source Diode	Is				-0.2	Α
Forward Current					-0.2	Α
Maximum Pulsed Drain-Source Diode	I _{SM}				-0.4	Α
Forward Current					-0.4	^
Diode Forward Voltage	V_{SD}	I _F =-0.2A, V _{GS} =0V			-1.4	V

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

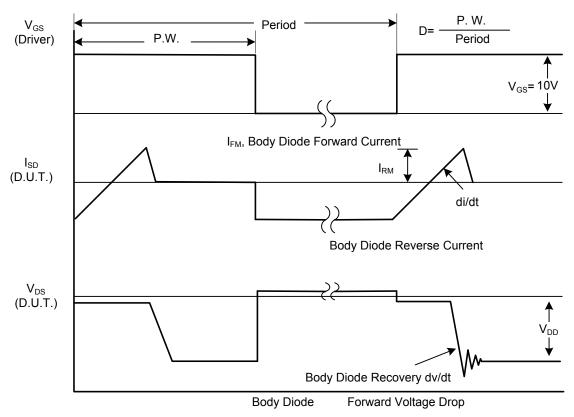
2. Essentially independent of operating temperature.

^{2.} Repetitive Rating: Pulse width limited by maximum junction temperature

■ TEST CIRCUITS AND WAVEFORMS

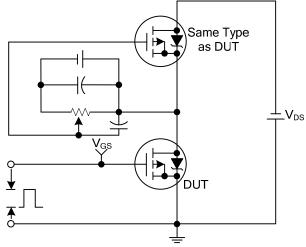


Peak Diode Recovery dv/dt Test Circuit



Peak Diode Recovery dv/dt Waveforms

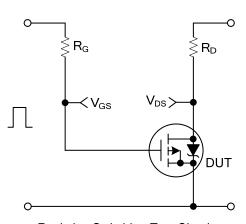
■ TEST CIRCUITS AND WAVEFORMS



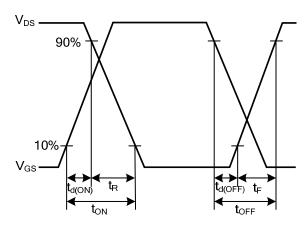
 $Q_{\rm G}$ $Q_{\rm G}$ $Q_{\rm GD}$ $Q_{\rm GD}$ $Q_{\rm GD}$

Gate Charge Test Circuit

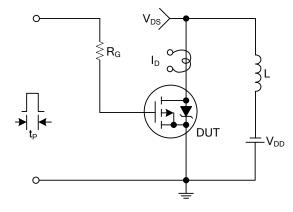
Gate Charge Waveforms



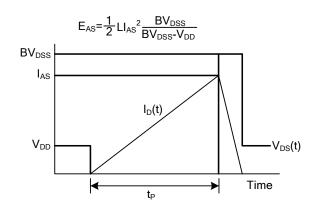
Resistive Switching Test Circuit



Resistive Switching Waveforms

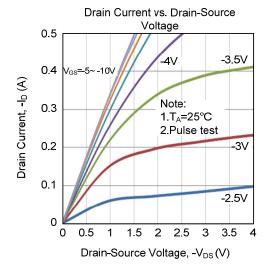


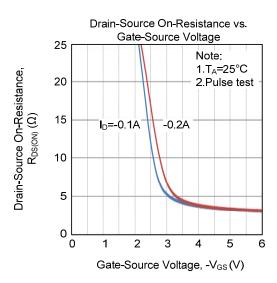
Unclamped Inductive Switching Test Circuit

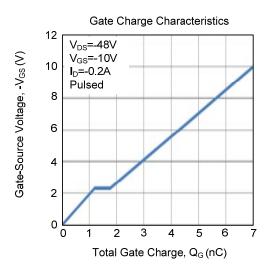


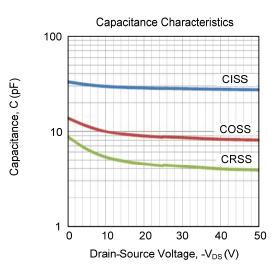
Unclamped Inductive Switching Waveforms

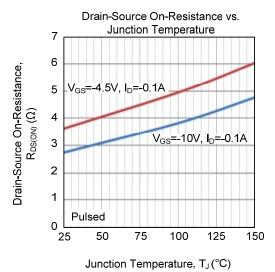
■ TYPICAL CHARACTERISTICS

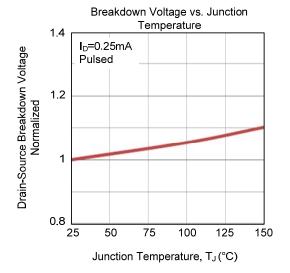




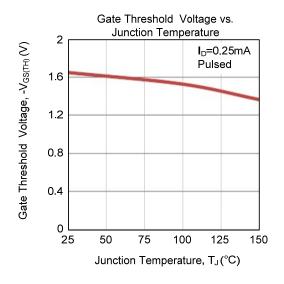


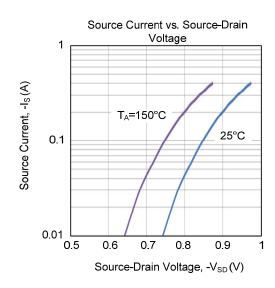


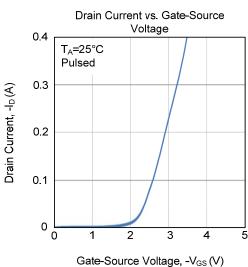


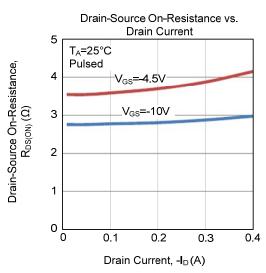


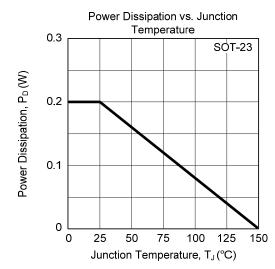
■ TYPICAL CHARACTERISTICS (Cont.)

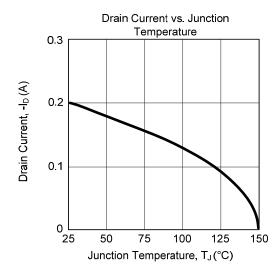




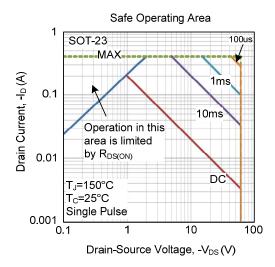








■ TYPICAL CHARACTERISTICS (Cont.)



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