



UT2304B

Preliminary

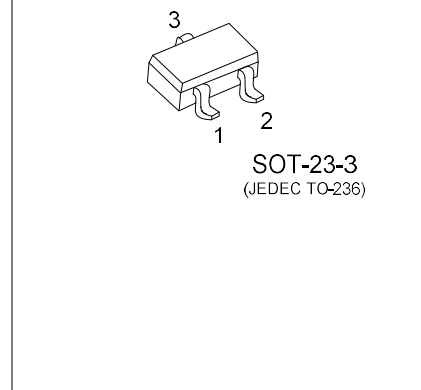
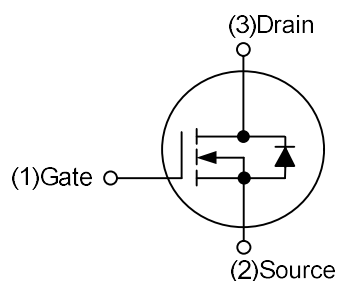
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

The **UTC UT2304B** is an N-Channel Power MOSFET that can achieve the lowest possible on-resistance, extremely and cost-effectiveness device by using advanced trench technology.

■ SYMBOL



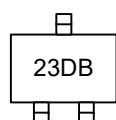
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2304BL-AE2-R	UT2304BG-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UT2304BG-AE2-R		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) AE2: SOT-23-3
		(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (Note 3)	I _D	2.5	A
Pulsed Drain Current (Note 1, 2)	I _{DM}	10	A
Power Dissipation	P _D	1.4	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Note: 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 CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ _{JA}	90	°C/W

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

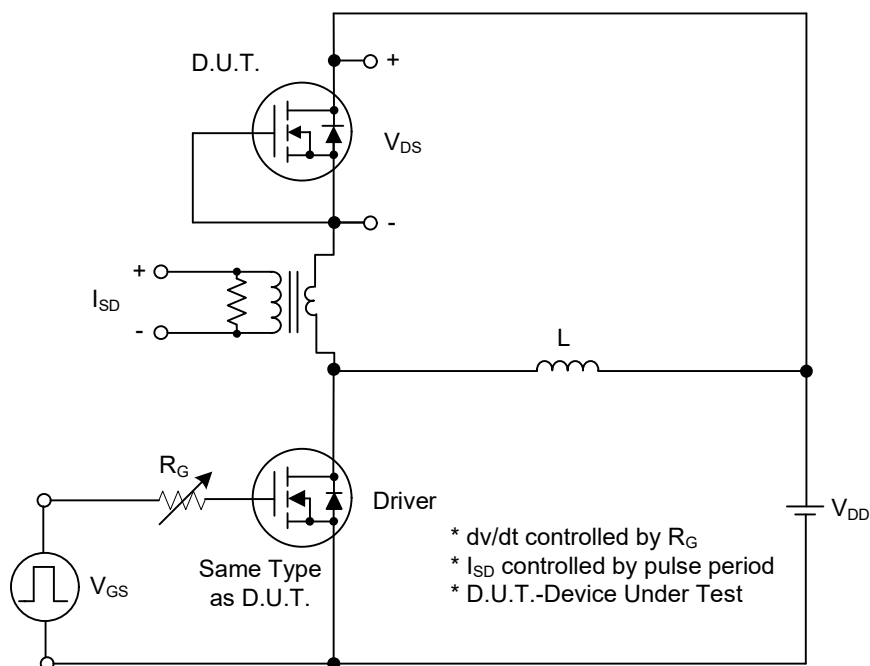
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	1.0		3.0	V
Static Drain-Source On-State Resistance (Note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =2.5A			96	mΩ
		V _{GS} =4.5V, I _D =2.0A			148	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1.0MHz		95		pF
Output Capacitance	C _{OSS}			29		pF
Reverse Transfer Capacitance	C _{RSS}			21		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q _G	V _{DS} =24V, V _{GS} =10V, I _D =2.5A		10		nC
Gate-Source Charge	Q _{GS}			2		nC
Gate-Drain Charge	Q _{GD}			2		nC
Turn-ON Delay Time (Note 2)	t _{D(ON)}	V _{DS} =15V, V _{GS} =10V, I _D =2.5A, R _G =3.3Ω		2		ns
Turn-ON Rise Time	t _R			14		ns
Turn-OFF Delay Time	t _{D(OFF)}			7		ns
Turn-OFF Fall Time	t _F			50		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage (Note 2)	V _{SD}	V _{GS} =0V, I _S =1.2A			1.2	V

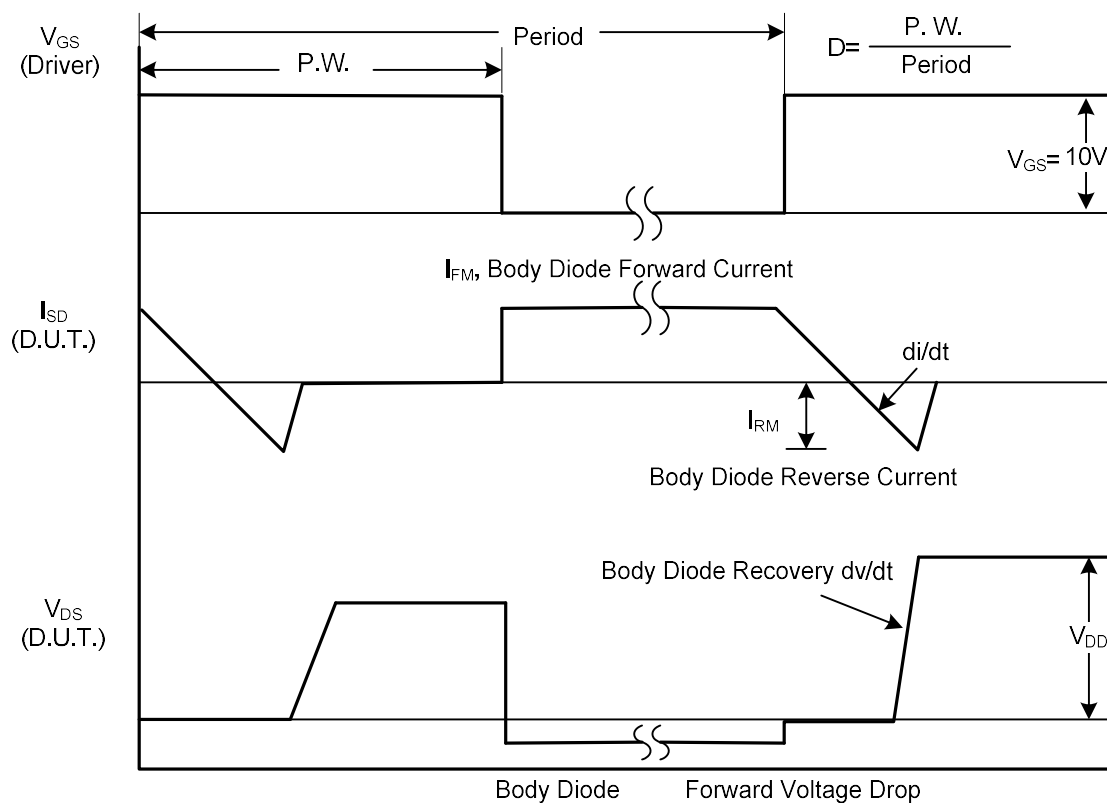
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

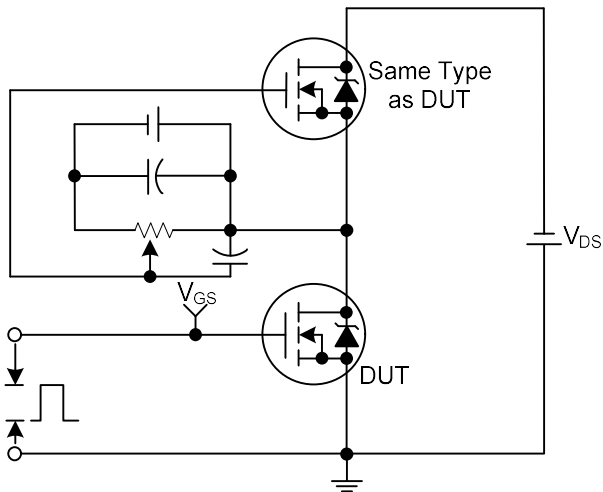


Peak Diode Recovery dv/dt Test Circuit

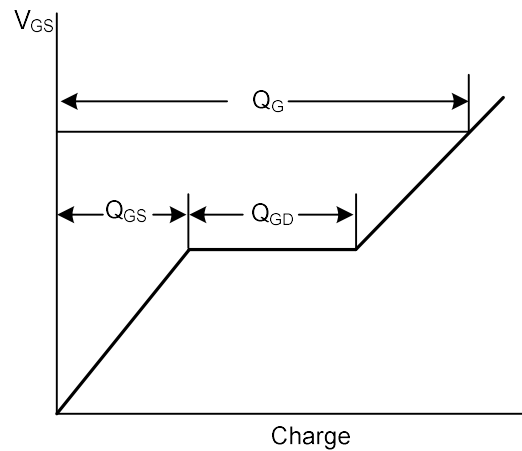


Peak Diode Recovery dv/dt Waveforms

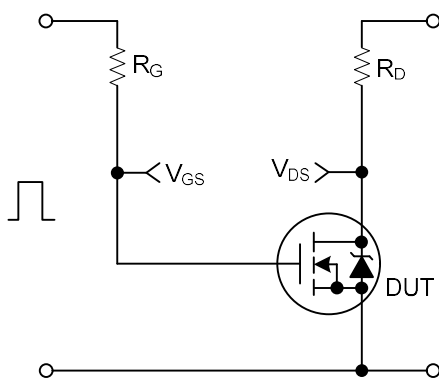
■ TEST CIRCUITS AND WAVEFORMS



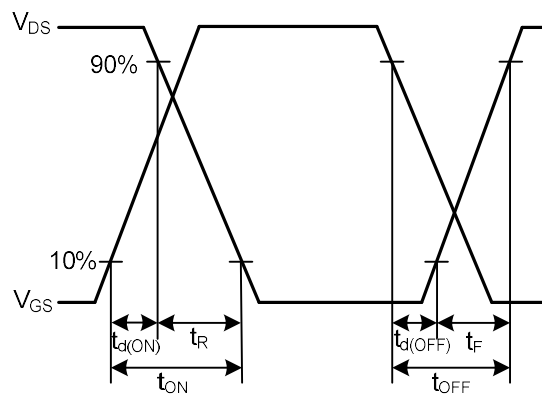
Gate Charge Test Circuit



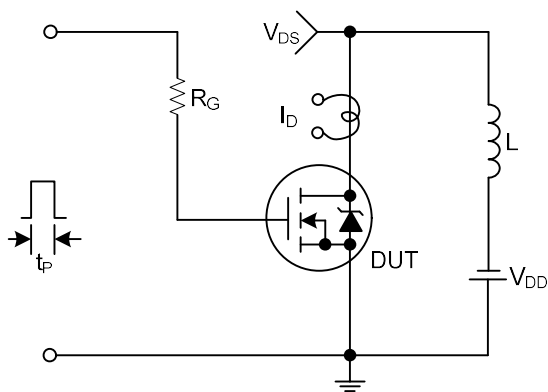
Gate Charge Waveforms



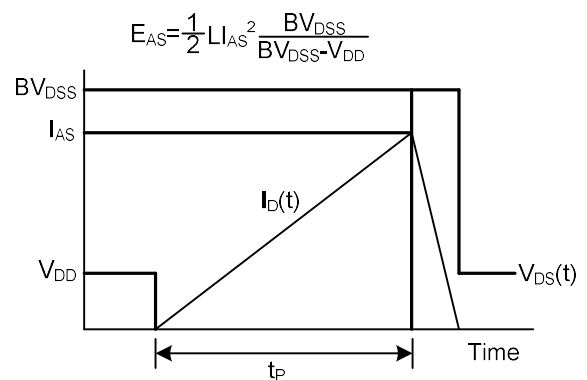
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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