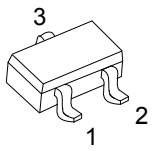
UT2343

Power MOSFET

-4.0A, -30V P-CHANNEL ENHANCEMENT MODE



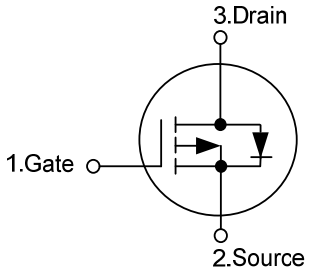
SOT-23
(EIAJ SC-59)

■ DESCRIPTION

The UTC **UT2343** is P-Channel enhancement mode Power MOSFET, designed in serried ranks with fast switching speed, low on-resistance and favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

■ SYMBOL



■ ORDERING INFORMATION

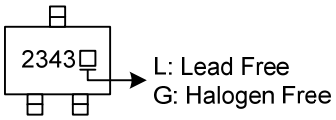
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2343L-AE3-R	UT2343G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT2343G-AE3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE3: SOT-23
(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) (T_C=25°C)	I_D	-4	A
Pulsed Drain Current (Note 2, 3)	I_{DM}	-15	A
Power Dissipation	P_D	1.38	W
Junction Temperature	T_J	+150	°C
Storage Temperature	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. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate

■ THERMAL DATA

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

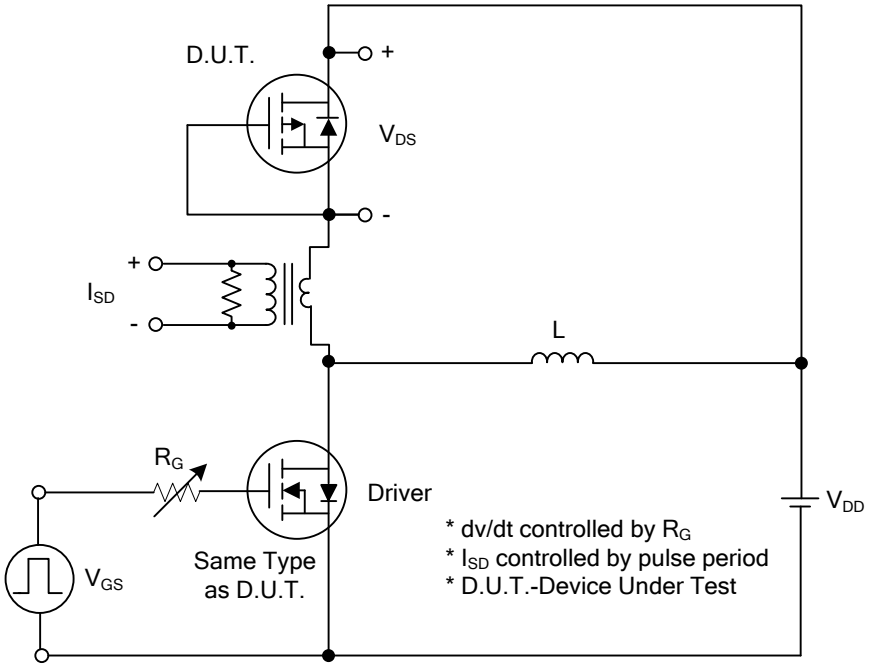
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

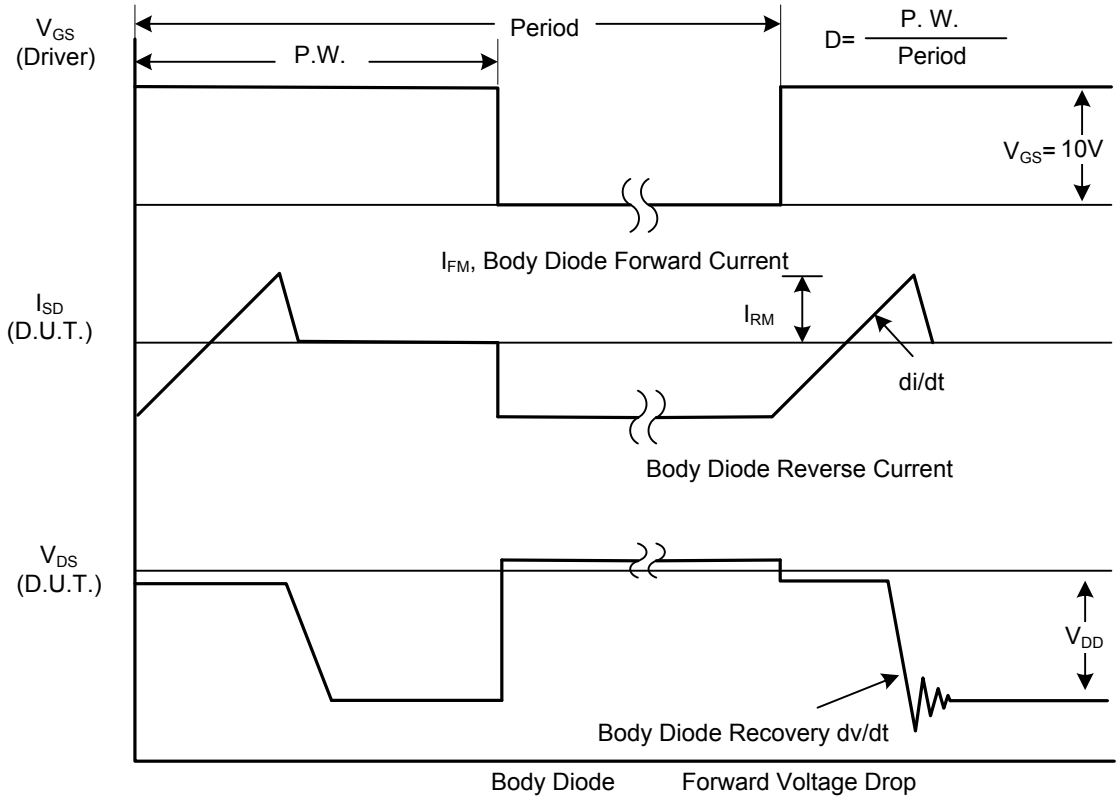
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-1.0		-2.5	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.0A			42	mΩ
		V_{GS}=-4.5V, I_D=-3.1A			63	mΩ
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	V_{DS}=-24V, V_{GS}=-10V, I_D=-4.0A (Note 1, 2)		24		nC
Gate-Source Charge	Q_{GS}			4		nC
Gate-Drain Charge	Q_{GD}			5.4		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{DS}=-15V, V_{GS}=-10V, I_D=-4.0A, R_G=6Ω (Note 1, 2)		6		ns
Turn-ON Rise Time	t_R			18		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			50		ns
Turn-OFF Fall Time	t_F			33		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	V_{GS}=0V, I_S=-4.0A			-1.4	V

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

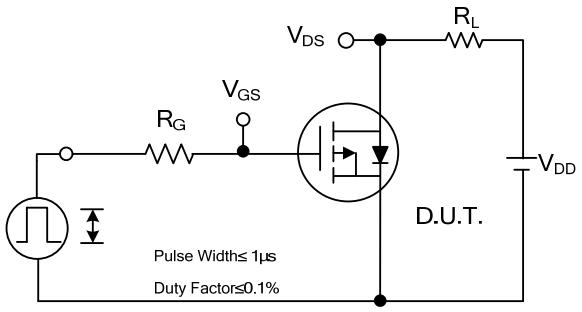


Peak Diode Recovery dv/dt Test Circuit

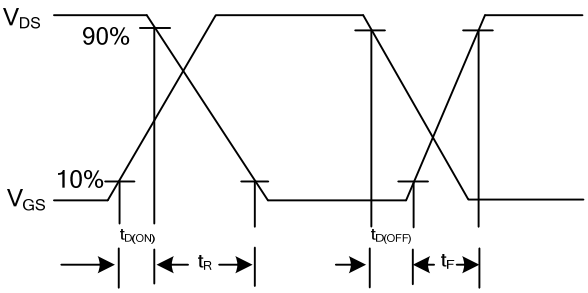


Peak Diode Recovery dv/dt Waveforms

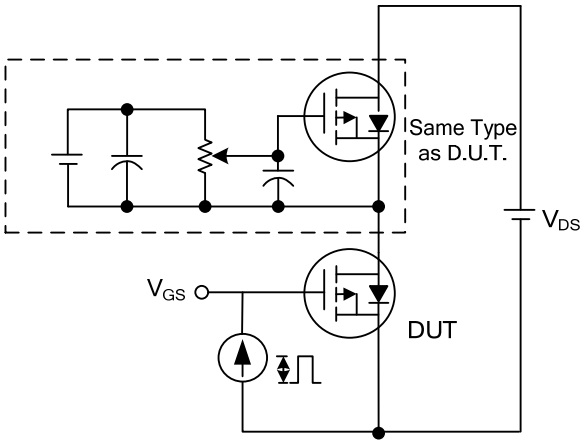
■ TEST CIRCUITS AND WAVEFORMS



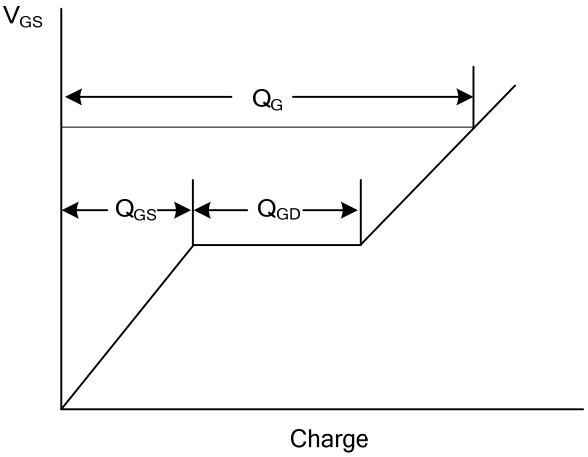
Switching Test Circuit



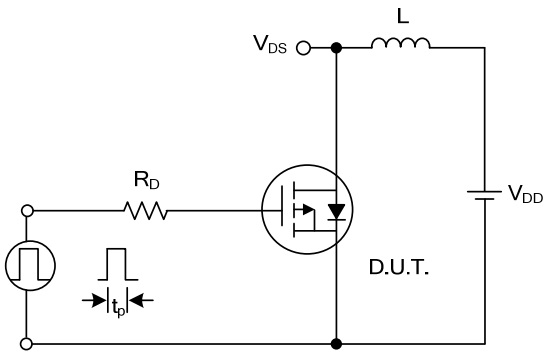
Switching Waveforms



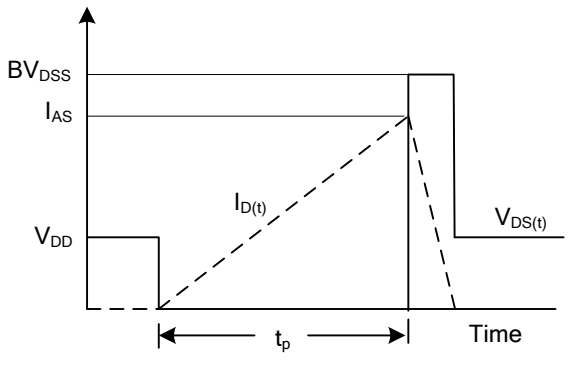
Gate Charge Test Circuit



Gate Charge Waveform

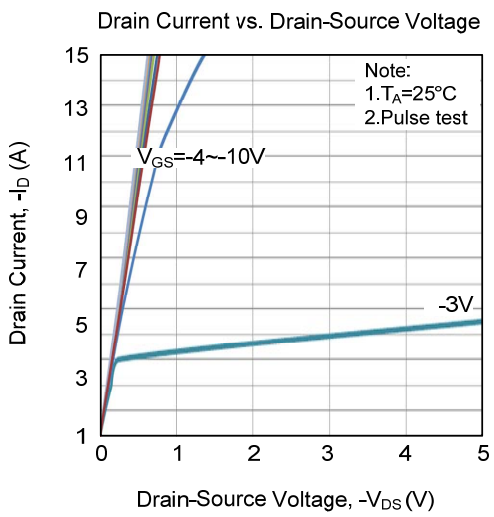


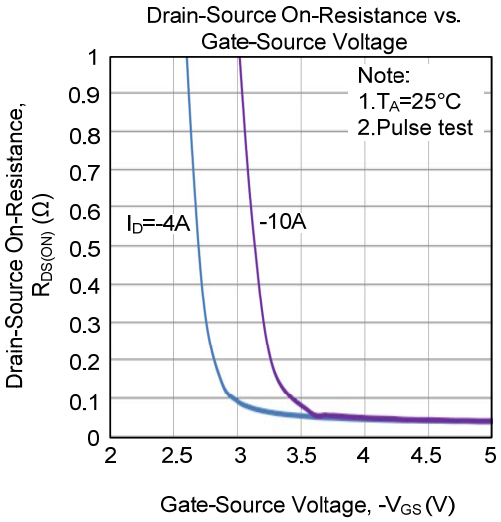
Unclamped Inductive Switching Test Circuit

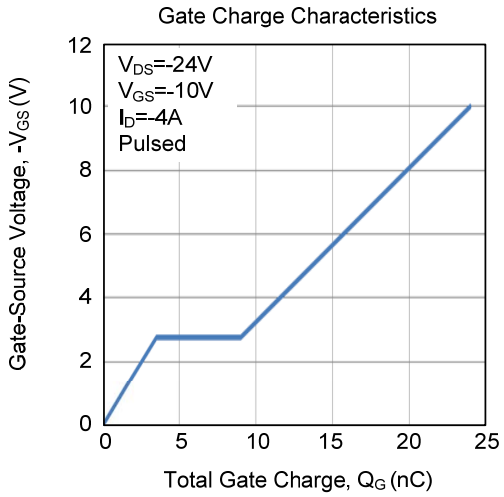


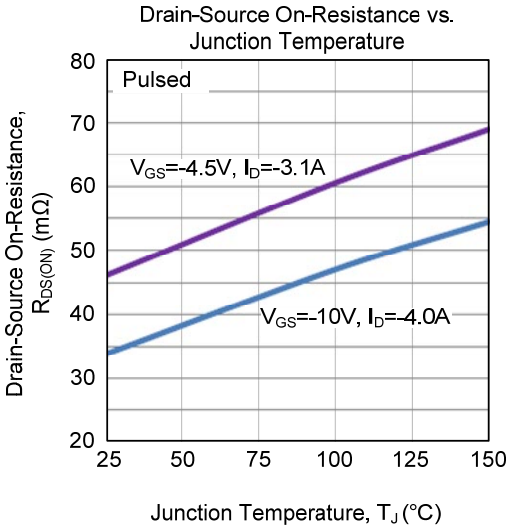
Unclamped Inductive Switching Waveforms

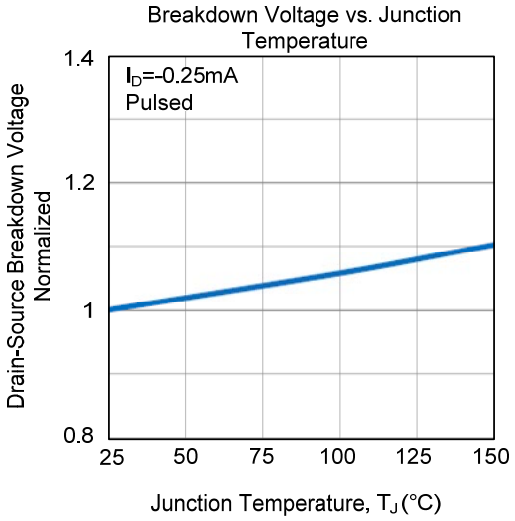
■ TYPICAL CHARACTERISTICS

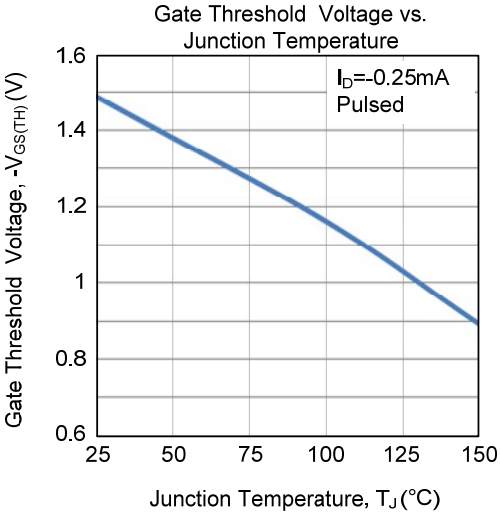






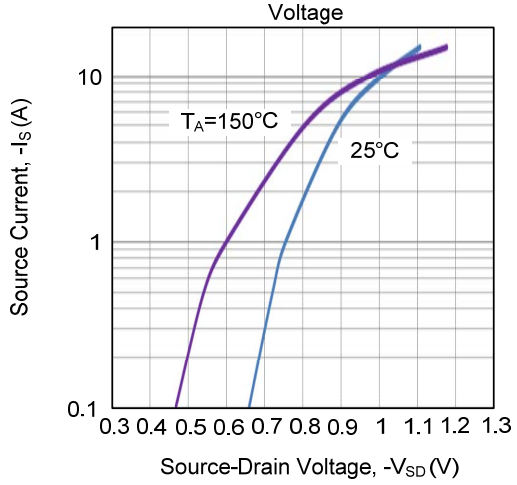




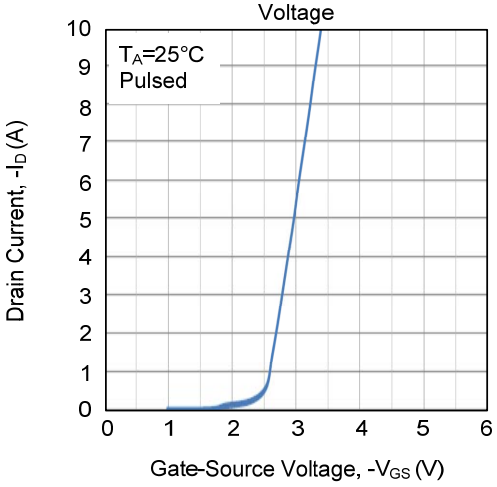


■ TYPICAL CHARACTERISTICS (Cont.)

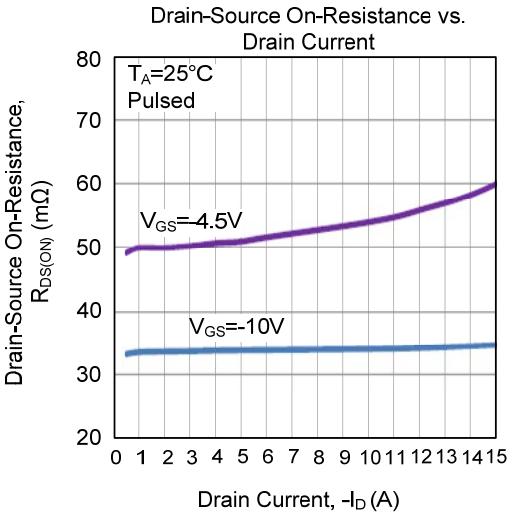
Source Current vs. Source-Drain Voltage



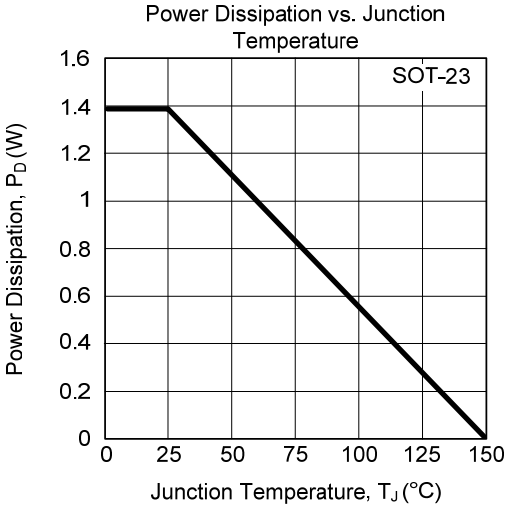
Drain Current vs. Gate-Source Voltage



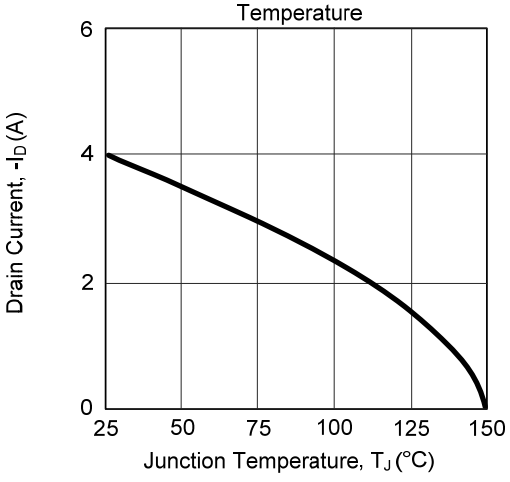
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



Safe Operating Area