



UT2302

Power MOSFET

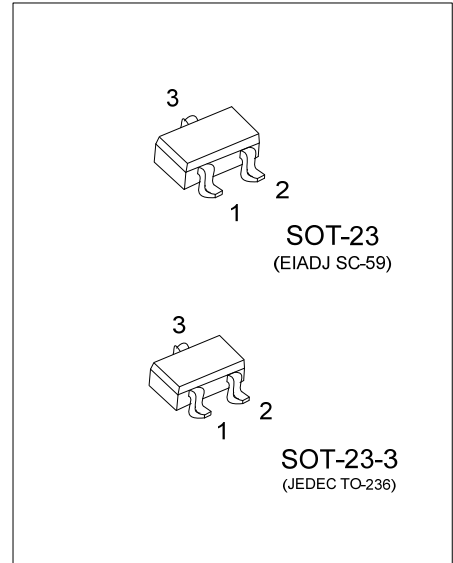
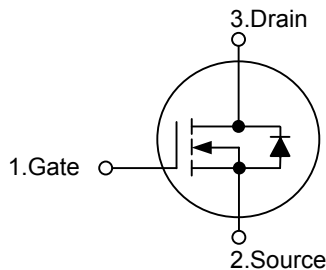
N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The UTC **UT2302** is N-channel Power MOSFET, designed with high density cell, with fast switching speed, ultra low on-resistance, and excellent thermal and electrical capabilities.

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

SYMBOL



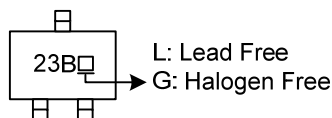
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2302L-AE2-R	UT2302G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2302L-AE3-R	UT2302G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT2302G-AE2-R		(1) Packing Type	(1) R: Tape Reel
		(2) Package Type	(2) AE2: SOT-23-3, 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	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	20	V
Gate-Source Voltage		V _{GSS}	±8	V
Drain Current (Note 1)	Continuous	I _D	2.4	A
	Pulsed	I _{DM}	10	A
Avalanche Energy	Single Pulsed (Note 3)	E _{AS}	7.8	mJ
Power Dissipation	SOT-23-3	P _D	0.5	W
	SOT-23		0.6	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. L=16mH, I_{AS}=0.9A, V_{DD}=20V, R_G=25Ω, Starting T_J=25°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	SOT-23-3	θ _{JA}	250	°C/W
	SOT-23		208	°C/W

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

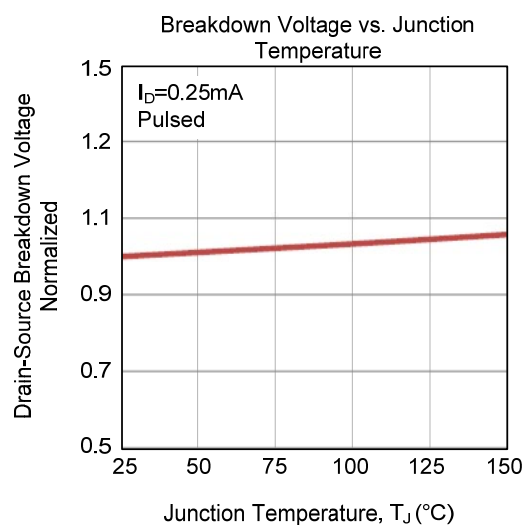
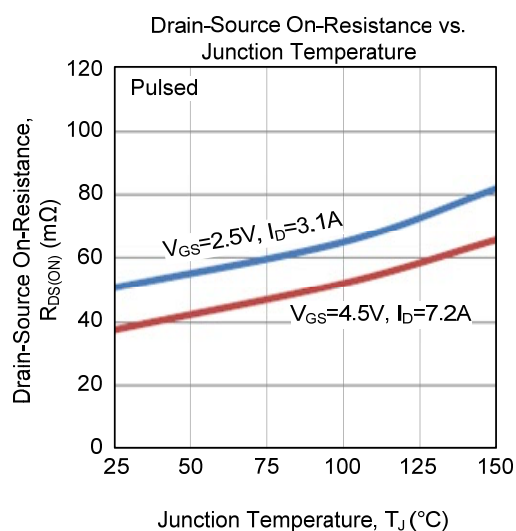
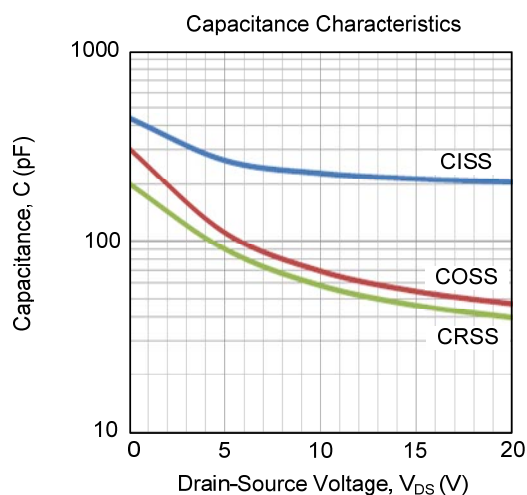
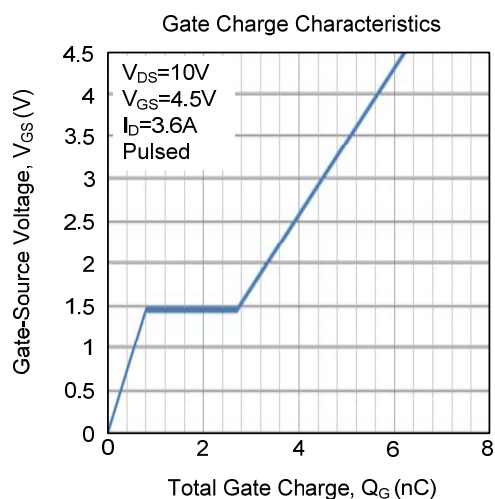
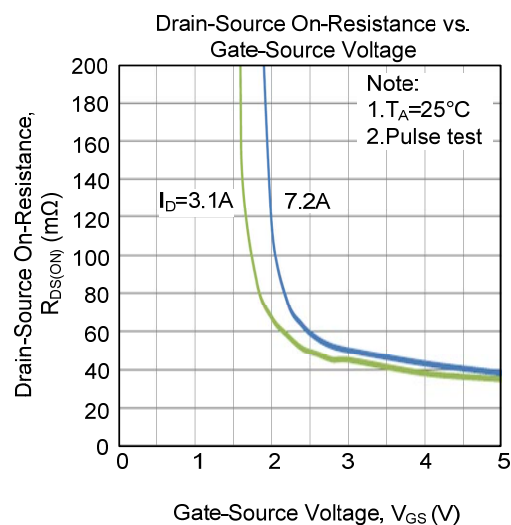
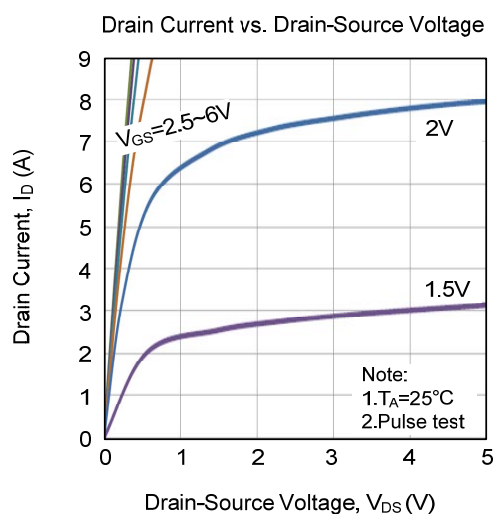
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.45		1.2	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =7.2A			50	mΩ
		V _{GS} =2.5V, I _D =3.1A			95	mΩ
On State Drain Current (Note2)	I _{D(ON)}	V _{DS} ≥5.0V, V _{GS} =4.5V	6			A
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =10V, V _{GS} =0V, f=1MHz		229		pF
Output Capacitance	C _{OSS}			67		pF
Reverse Transfer Capacitance	C _{RSS}			57		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =10V, V _{GS} =4.5V, I _D =3.6A		6.2	10	nC
Gate-Source Charge	Q _{GS}			0.8		nC
Gate-Drain Charge	Q _{GD}			1.9		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =10V, R _L =10Ω, I _D =1.0A, V _{GEN} =4.5V, R _G =6Ω		5		ns
Turn-ON Rise Time	t _R			16		ns
Turn-OFF Delay Time	t _{D(OFF)}			14		ns
Turn-OFF Fall-Time	t _F			21		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				1.6	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1.0A		0.76	1.2	V

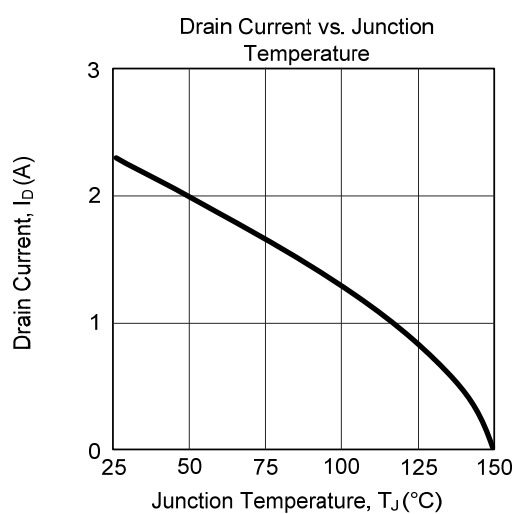
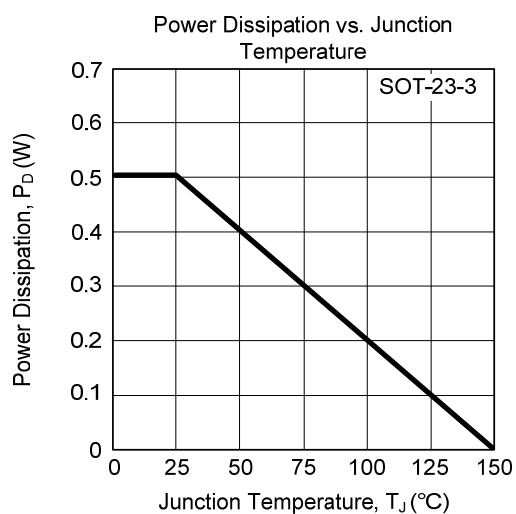
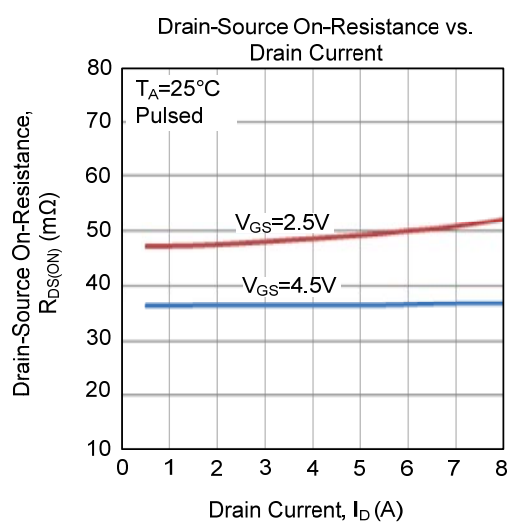
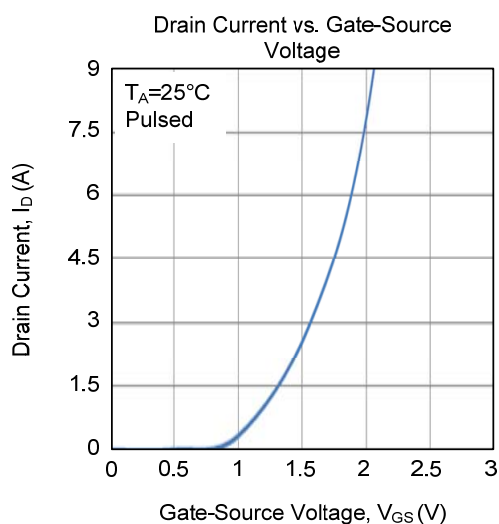
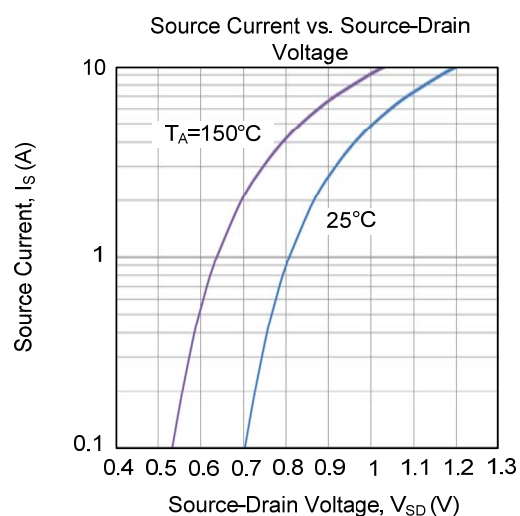
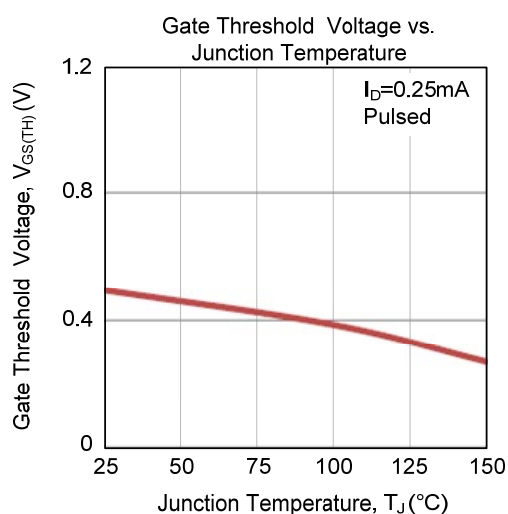
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

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

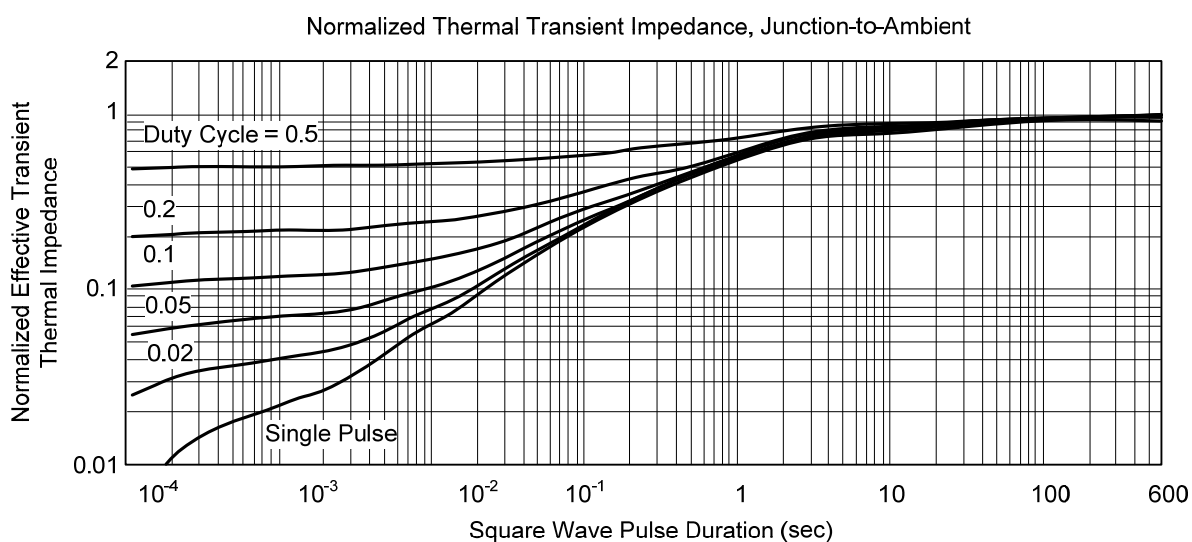
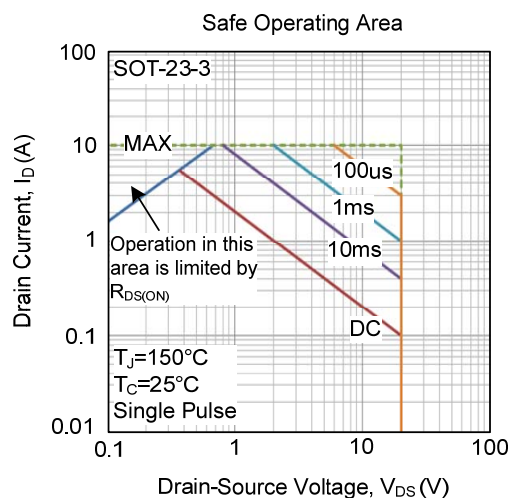
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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