



UT2304

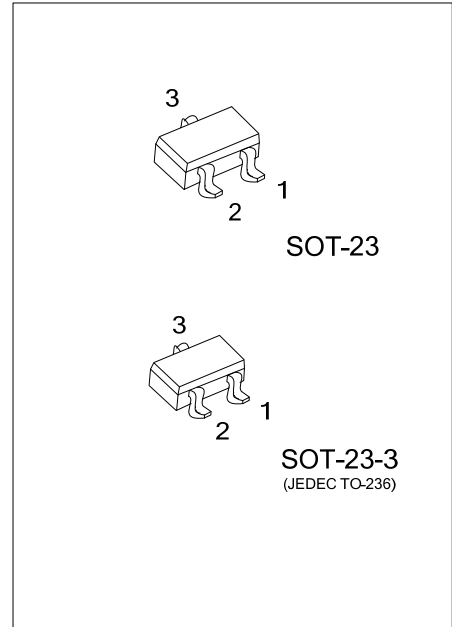
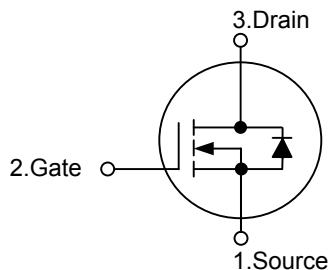
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The **UT2304** 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

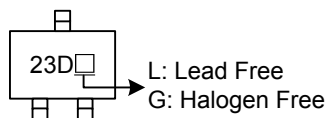


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2304L-AE2-R	UT2304G-AE2-R	SOT-23-3	S	G	D	Tape Reel
UT2304L-AE3-R	UT2304G-AE3-R	SOT-23	S	G	D	Tape Reel

	(1) Packing Type (2) Package Type (3) Lead Free	(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23 (3) G: Halogen Free, L: Lead Free
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MARKING



ABSOLUTE MAXIMUM RATINGS ($T_a = 25^{\circ}\text{C}$, 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	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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 DATA

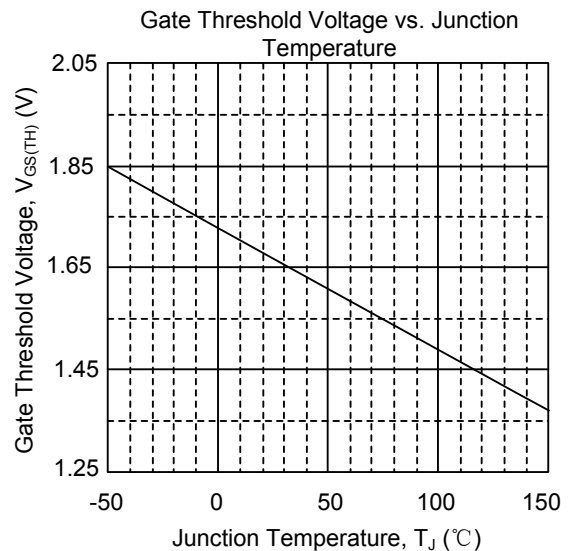
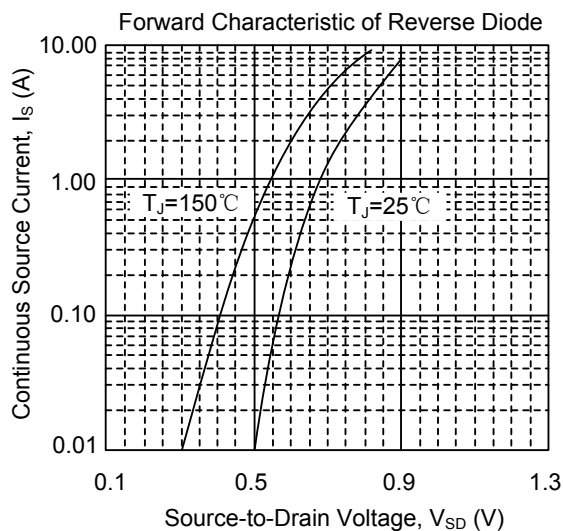
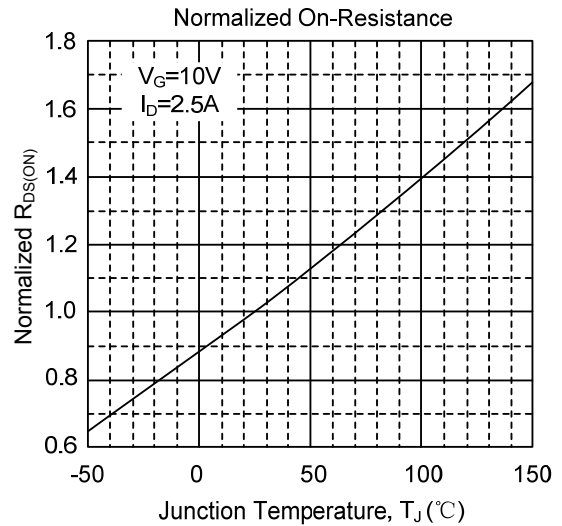
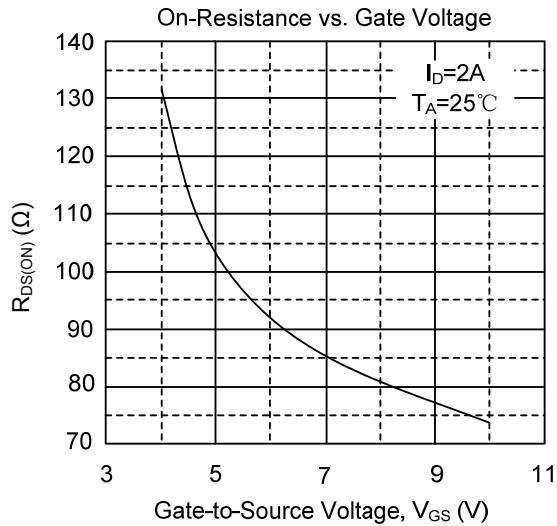
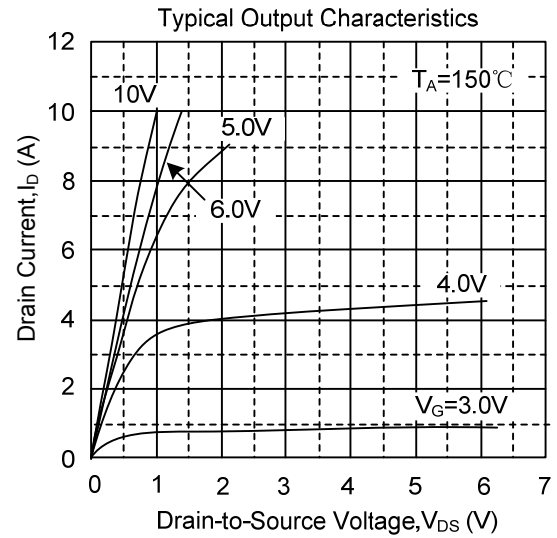
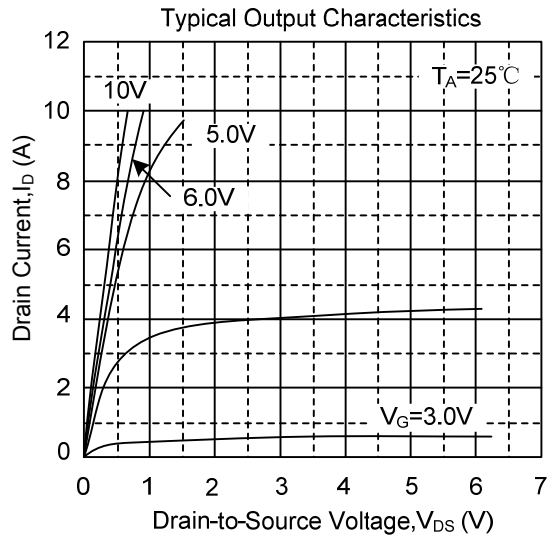
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ_{JA}			90	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS ($T_J = 25^{\circ}\text{C}$, unless otherwise specified)

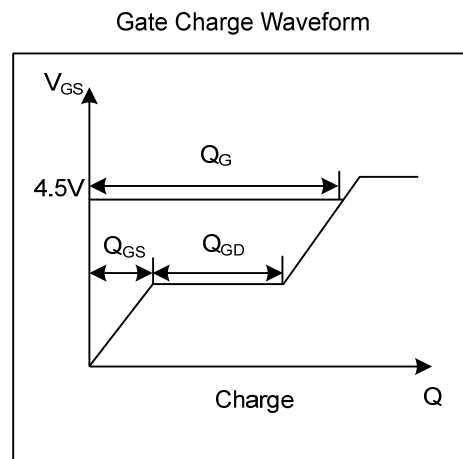
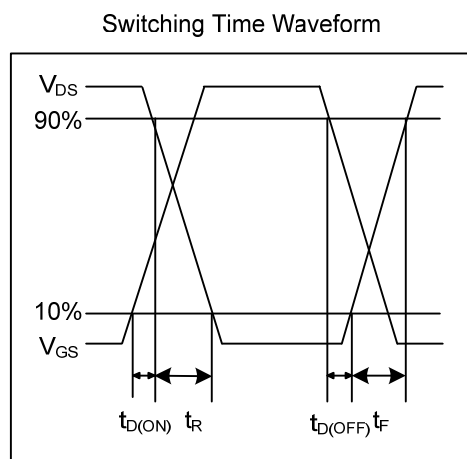
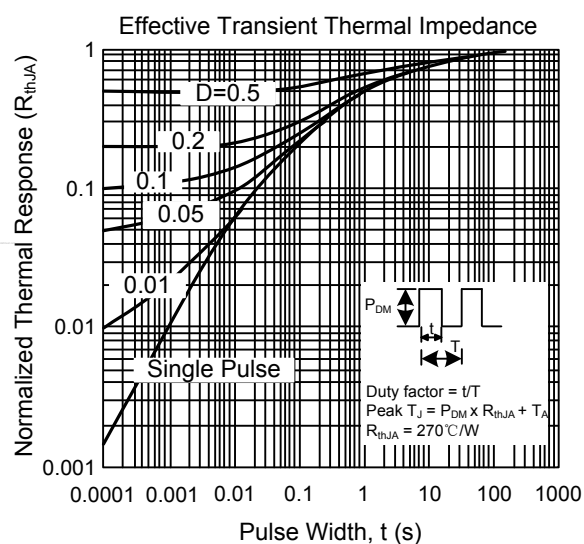
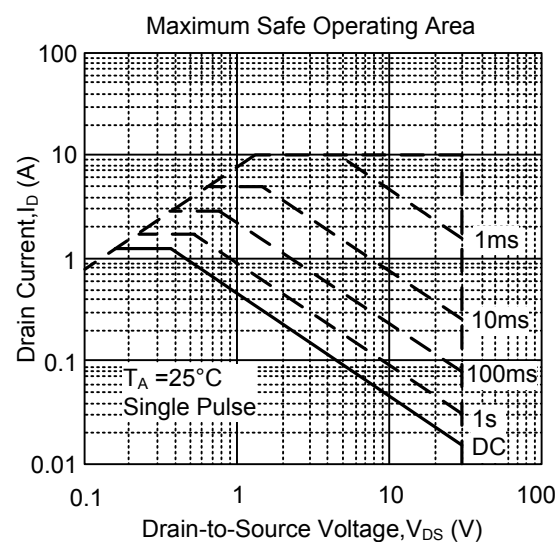
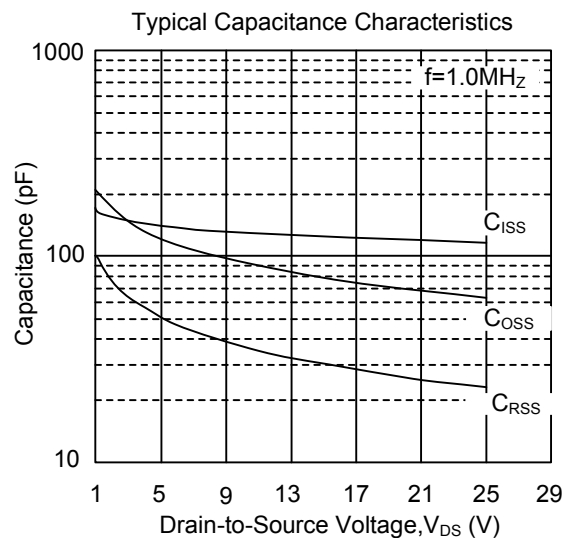
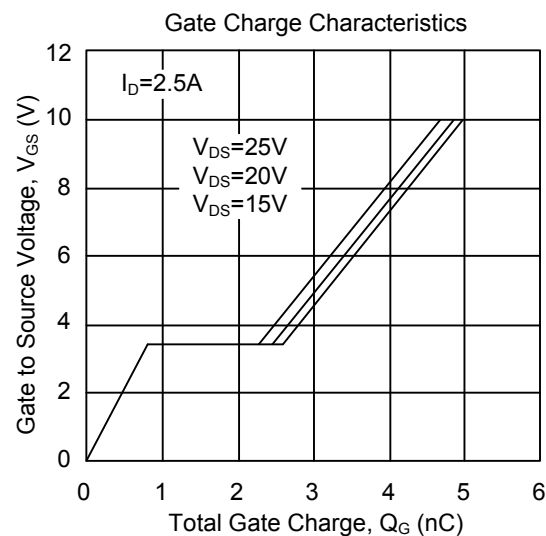
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25 °C, I _D =1mA		0.1		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250uA	1		3	V
Static Drain-Source On-State Resistance (Note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =2.5A			117	mΩ
		V _{GS} =4.5V, I _D =2A			190	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		120	190	pF
Output Capacitance	C _{OSS}			62		pF
Reverse Transfer Capacitance	C _{RSS}			24		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	t _{D(ON)}	V _{DS} =15V, V _{GS} =10V, I _D =1A, R _G =3.3Ω, R _D =15 Ω		5		ns
Turn-ON Rise Time	t _R			9		ns
Turn-OFF Delay Time	t _{D(OFF)}			11		ns
Turn-OFF Fall Time	t _F			2		ns
Total Gate Charge (Note 2)	Q _G	V _{DS} =24V, V _{GS} =4.5V, I _D =2.5A		3	5	nC
Gate-Source Charge	Q _{GS}			0.8		nC
Gate-Drain Charge	Q _{GD}			1.8		nC
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage (Note 2)	V _{SD}	V _{GS} =0V, I _S =1.2A			1.2	V
Reverse Recovery Time (Note 2)	t _{RR}	I _S =2A, V _{GS} =0V,		24		ns
Reverse Recovery Charge	Q _{RR}	dl/dt=100A/μs		23		nC

Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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