



UT2304

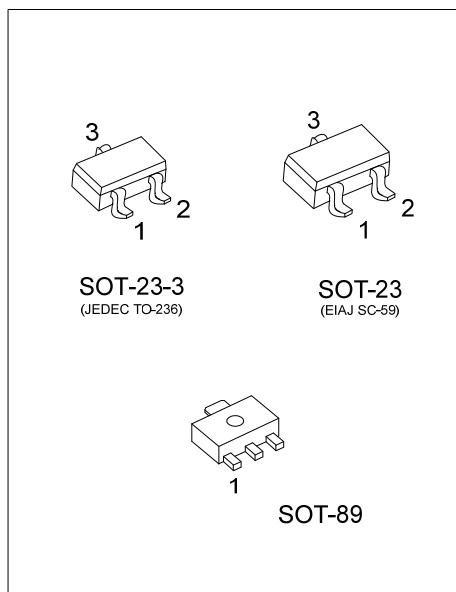
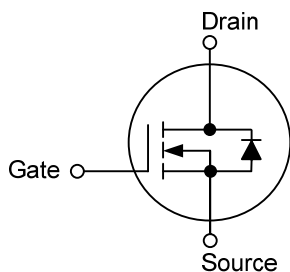
Power MOSFET

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-AB3-R	UT2304G-AB3-R	SOT-89	G	D	S	Tape Reel
UT2304L-AE2-R	UT2304G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2304L-AE3-R	UT2304G-AE3-R	SOT-23	G	S	D	Tape Reel

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

<p>UT2304G-AB3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89, AE2: SOT-23-3, AE3: SOT-23</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23 / SOT-23-3	SOT-89

■ 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 CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	90	$^{\circ}\text{C}/\text{W}$

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

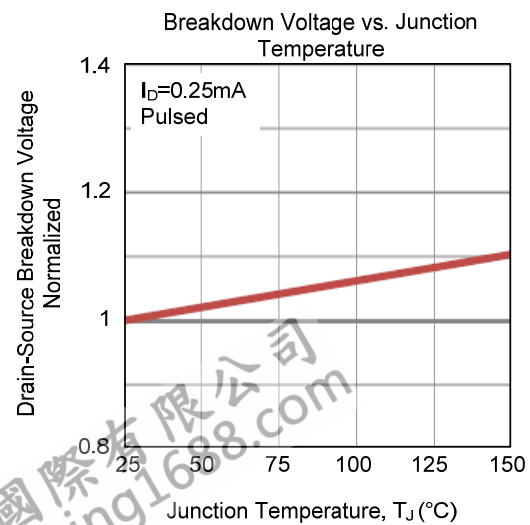
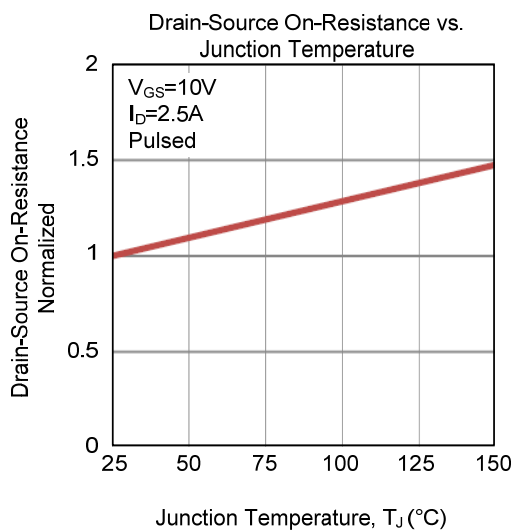
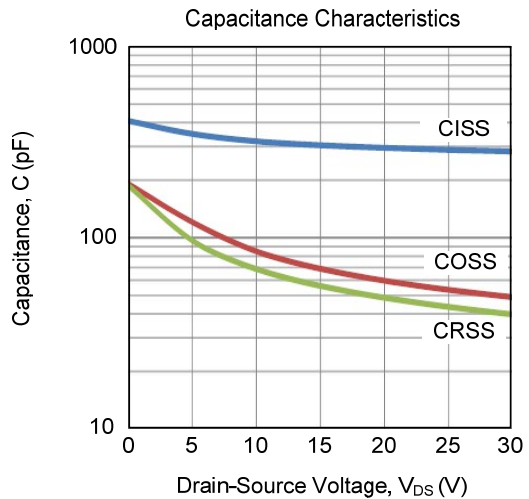
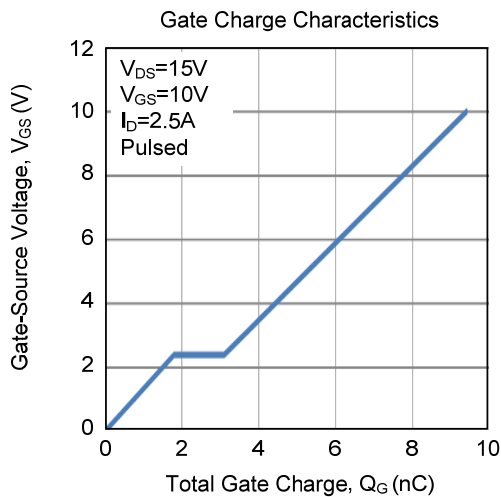
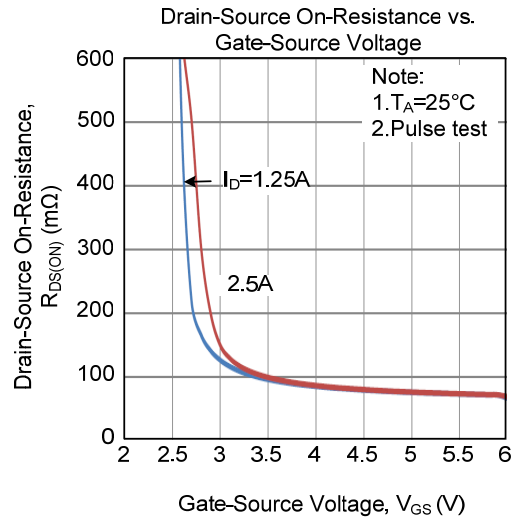
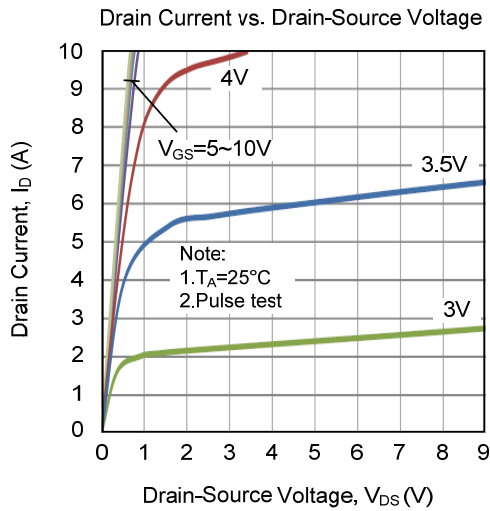
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=2.5\text{A}$			117	m Ω
		$V_{GS}=4.5\text{V}, I_D=2\text{A}$			190	m Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=25\text{V}, f=1.0\text{MHz}$		280		pF
Output Capacitance	C_{OSS}			53		pF
Reverse Transfer Capacitance	C_{RSS}			43		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=2.5\text{A}$		9.4		nC
Gate-Source Charge	Q_{GS}			1.8		nC
Gate-Drain Charge	Q_{GD}			1.3		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=2.5\text{A}, R_G=3.3\Omega, R_D=15\Omega$		3.2		ns
Turn-ON Rise Time	t_R			15		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			13		ns
Turn-OFF Fall Time	t_F			6.5		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage (Note 2)	V_{SD}	$V_{GS}=0\text{V}, I_S=1.2\text{A}$			1.2	V

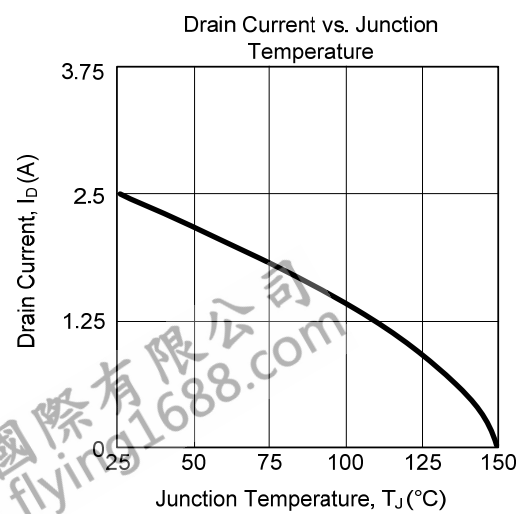
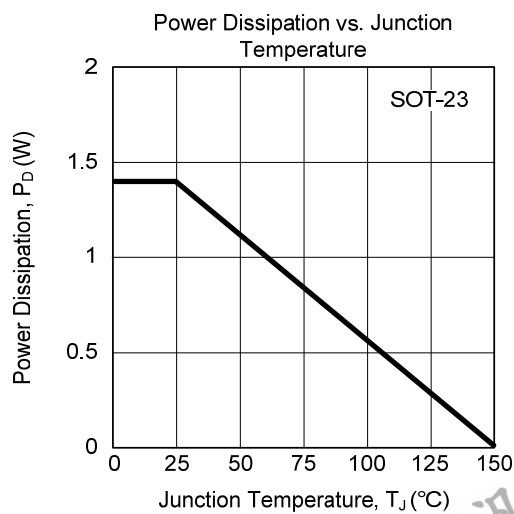
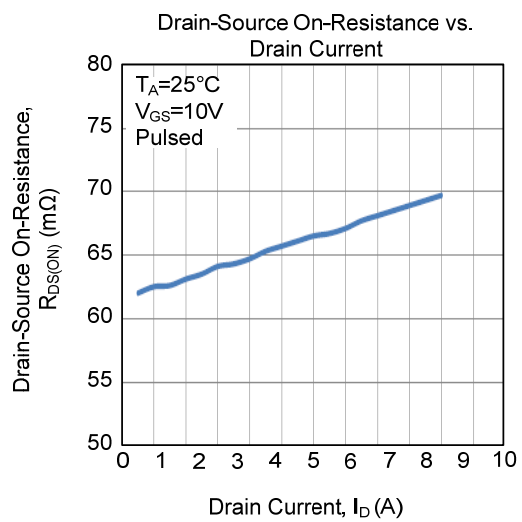
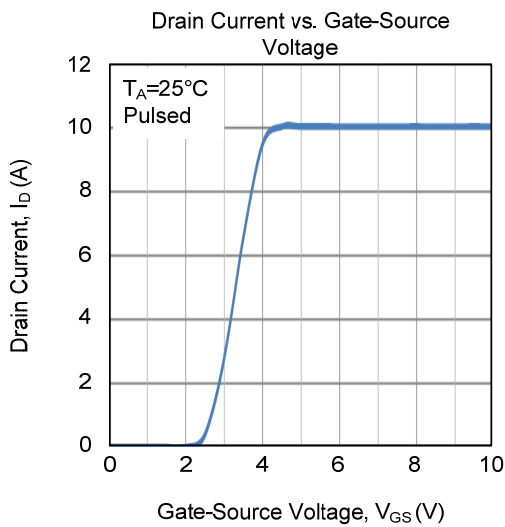
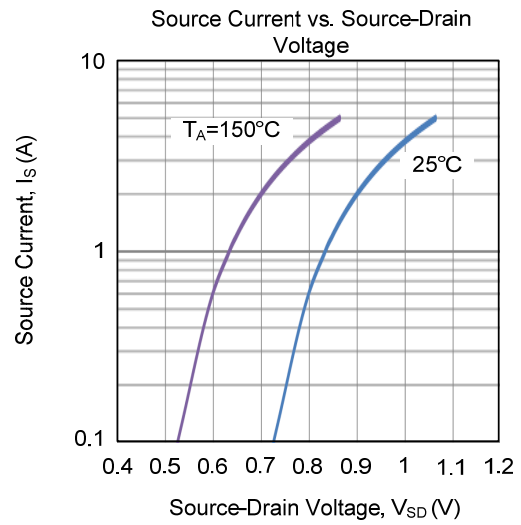
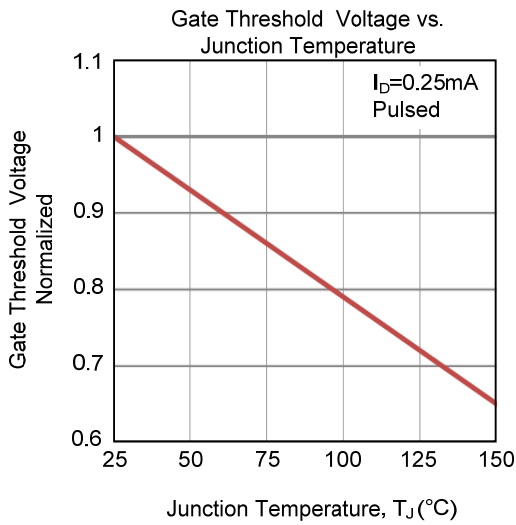
Notes: 1. Repetitive rating, pulse width limited by junction temperature.

2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

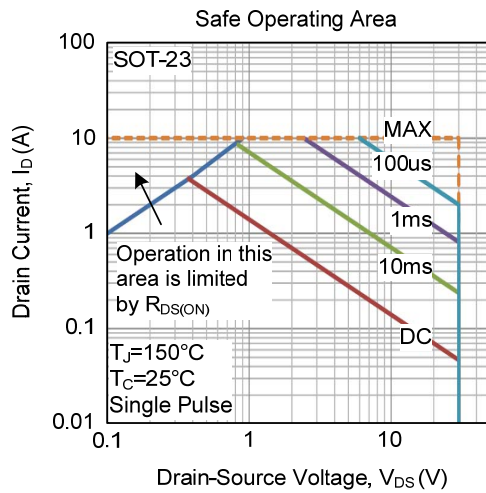
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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