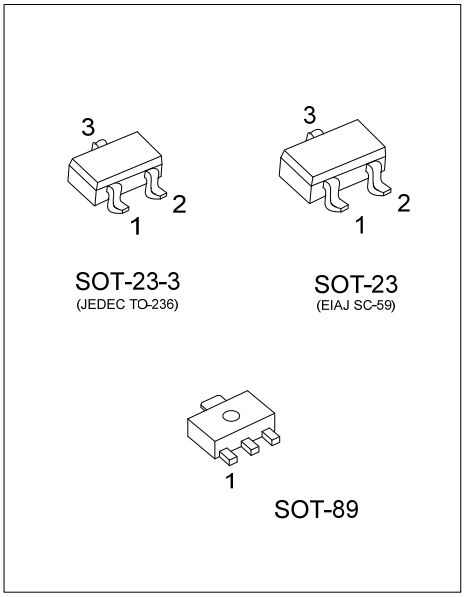
UT2304

Power MOSFET

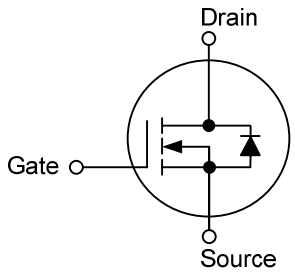
N-CHANNEL ENHANCEMENT MODE



■ 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.

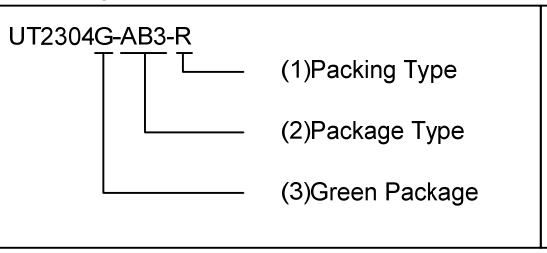
■ SYMBOL



■ 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

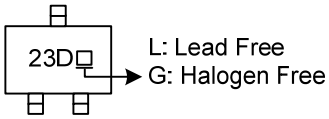
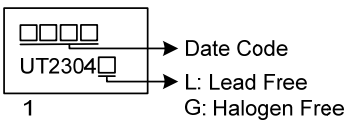


(1) R: Tape Reel

(2) AB3: SOT-89, AE2: SOT-23-3, AE3: SOT-23

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

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

■ 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

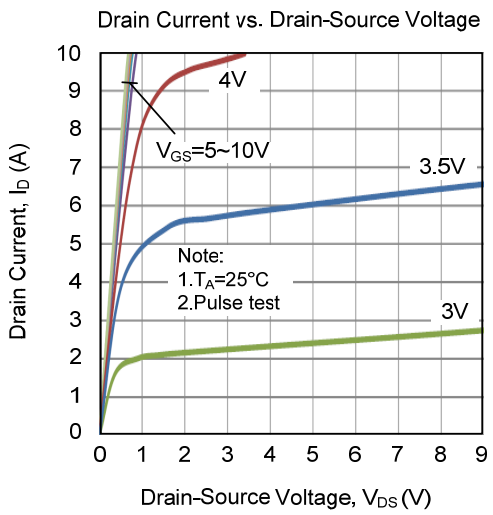
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

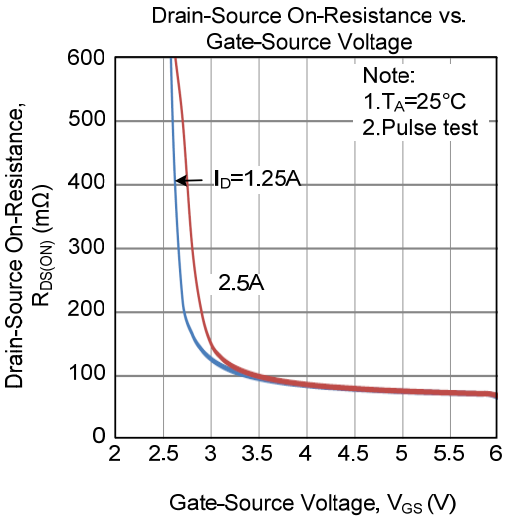
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

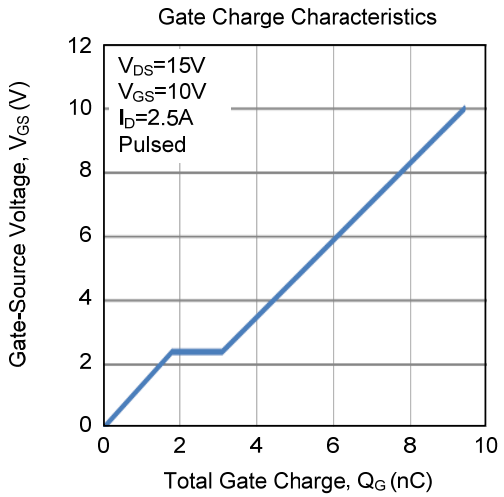
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
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			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		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}=15V, V_{GS}=10V, I_D=2.5A		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}=15V, V_{GS}=10V, I_D=2.5A, R_G=3.3Ω, R_D=15 Ω		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}=0V, I_S=1.2A			1.2	V

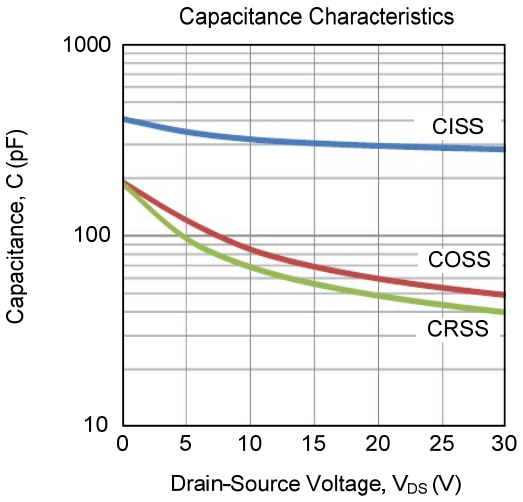
Notes: 1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse width ≤300μs, duty cycle ≤2%.

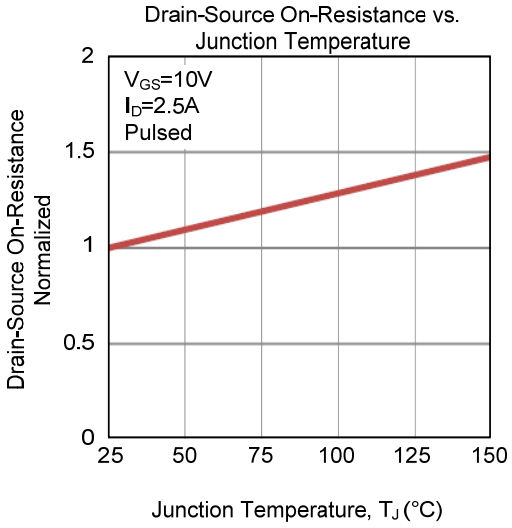
■ TYPICAL CHARACTERISTICS

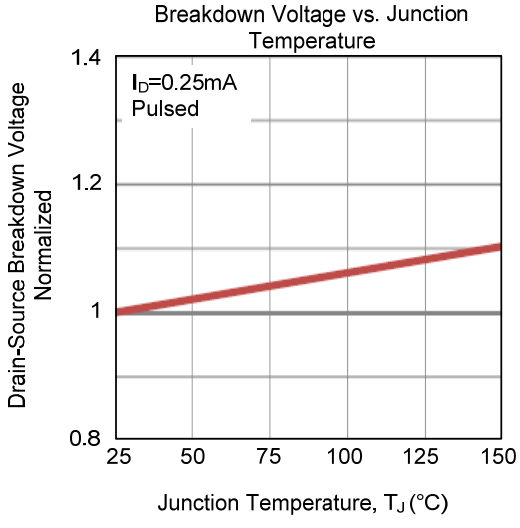






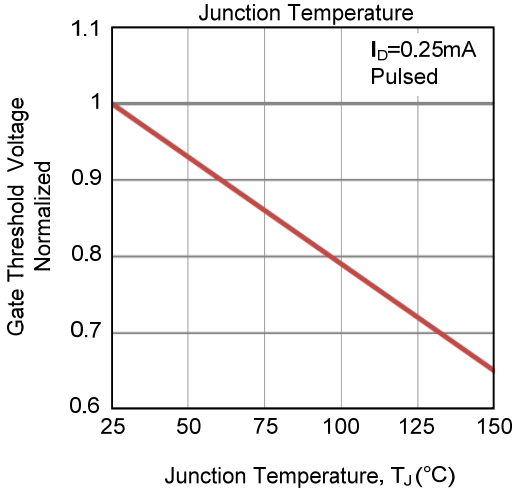




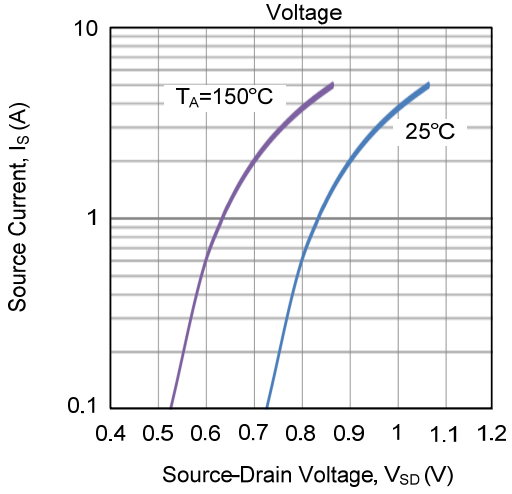


■ TYPICAL CHARACTERISTICS (Cont.)

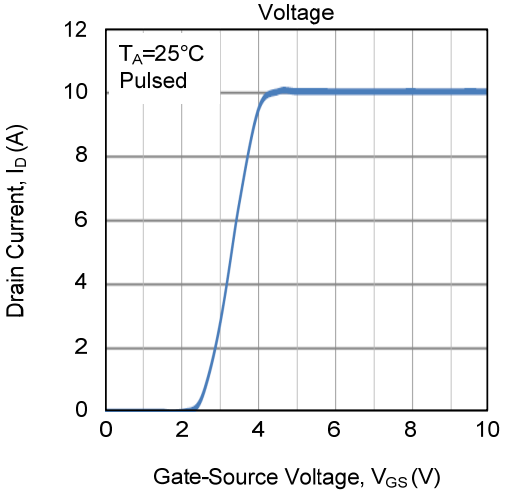
Gate Threshold Voltage vs. Junction Temperature



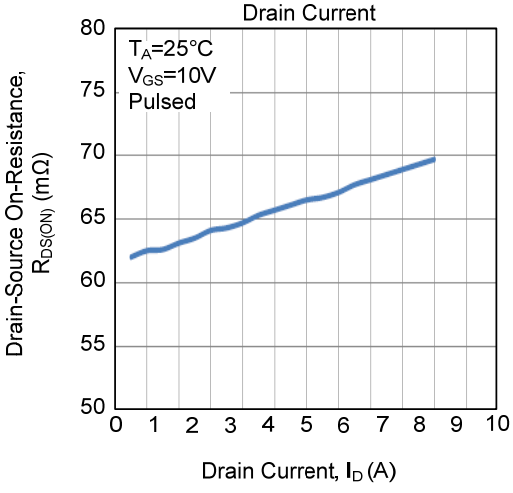
Source Current vs. Source-Drain Voltage



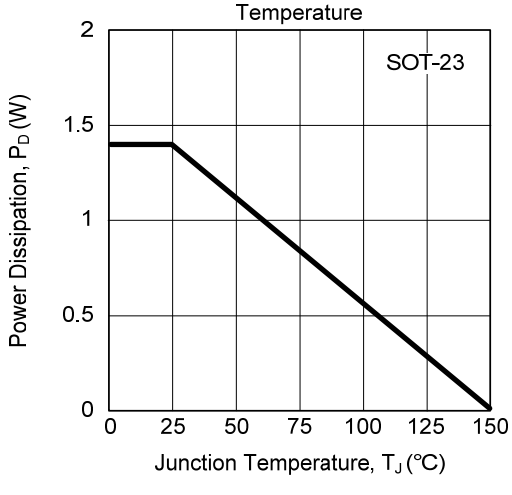
Drain Current vs. Gate-Source Voltage



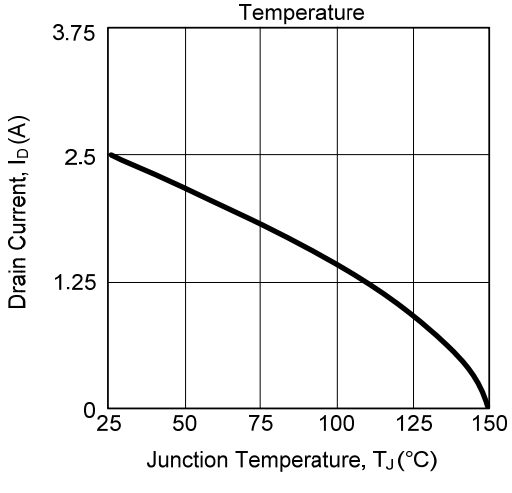
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)