



UT3404

Power MOSFET

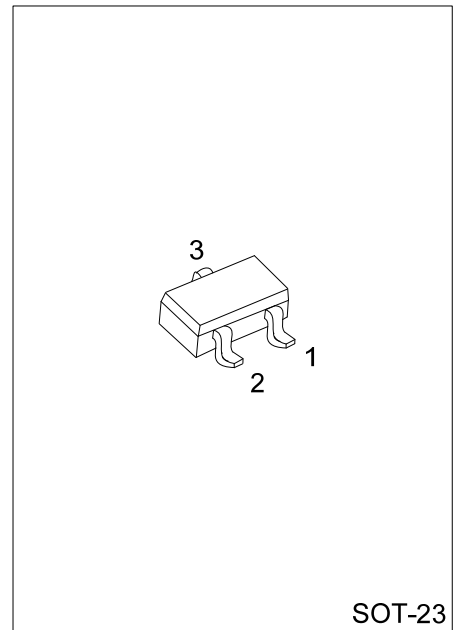
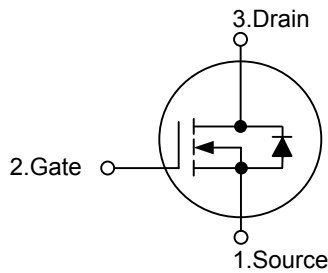
N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The **UT3404** is N-Channel enhancement mode Power MOSFET, designed with high density cell, with fast switching speed, low on-resistance, excellent thermal and electrical capabilities and operation with low gate voltages.

This device is suitable for use as a load switch or in PWM applications.

SYMBOL

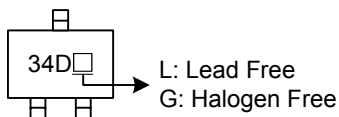


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3404L-AE3-R	UT3404G-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UT3404L-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current (Note 3)	I_D	5.8	A
Pulsed Drain Current (Note 1, 2)	I_{DM}	20	A
Power Dissipation	P_D	1.4	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Strong 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

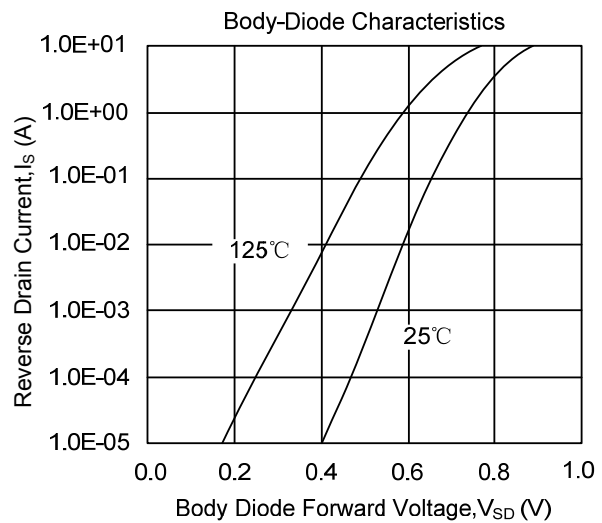
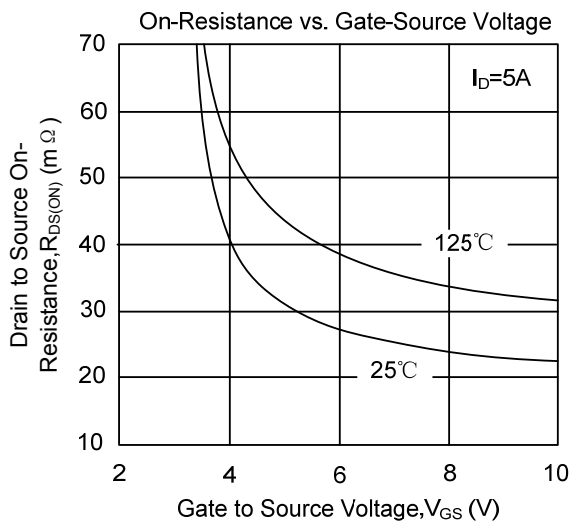
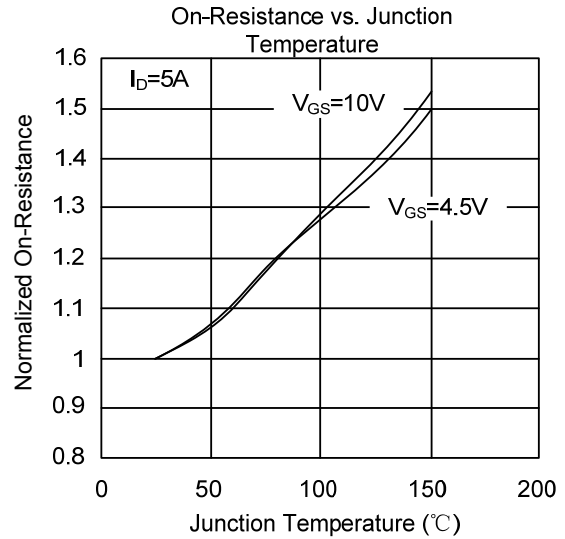
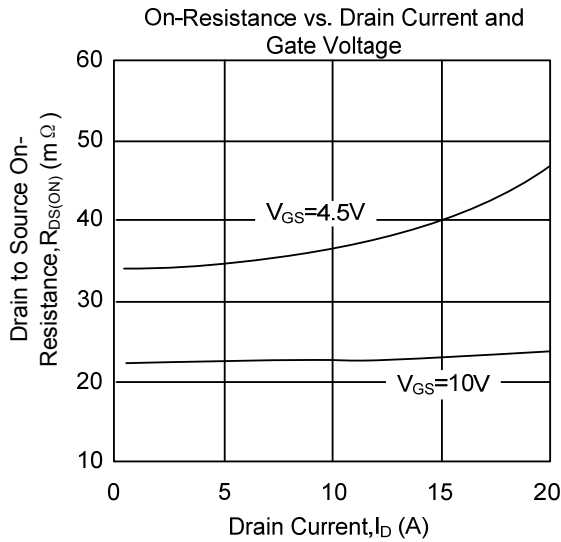
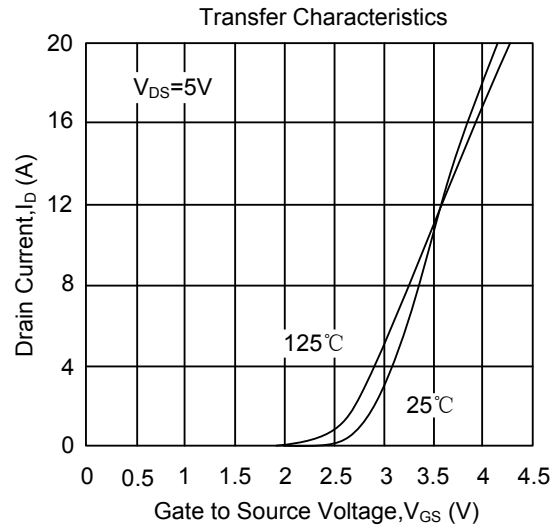
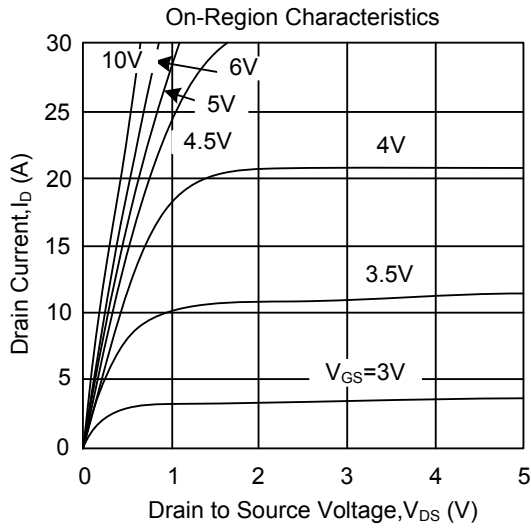
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ_{JA}		85	125	$^\circ\text{C}/\text{W}$

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

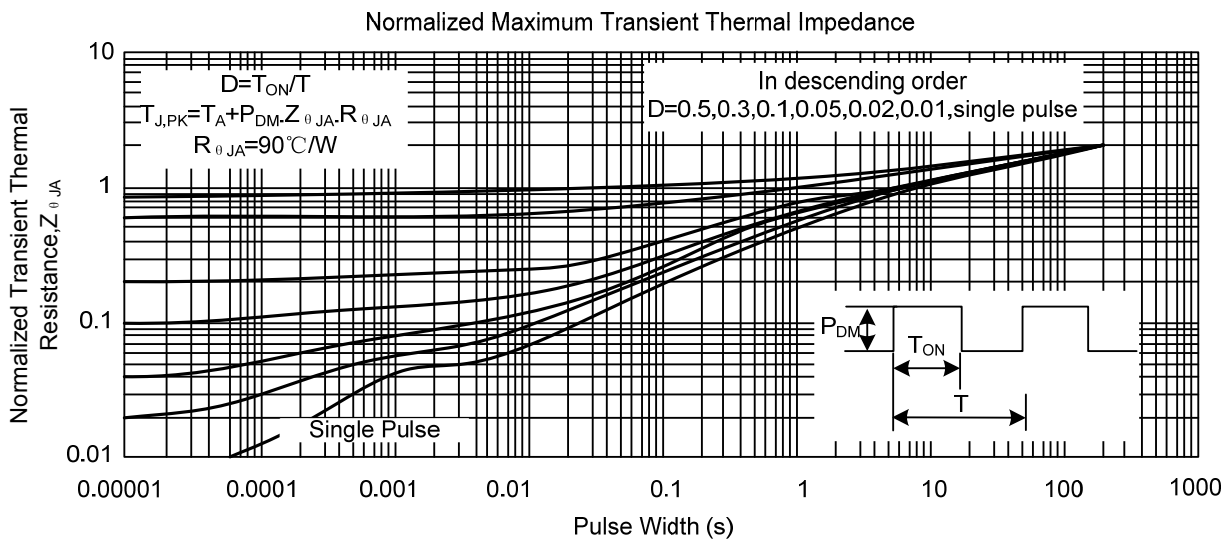
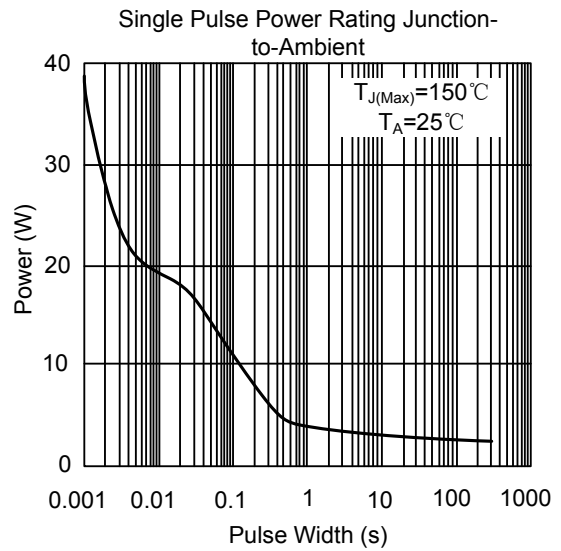
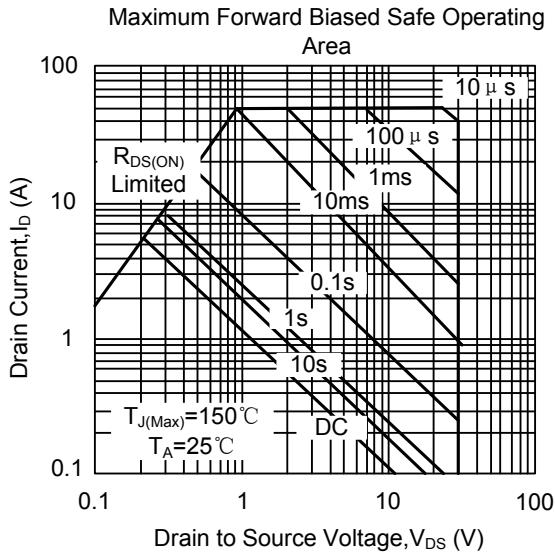
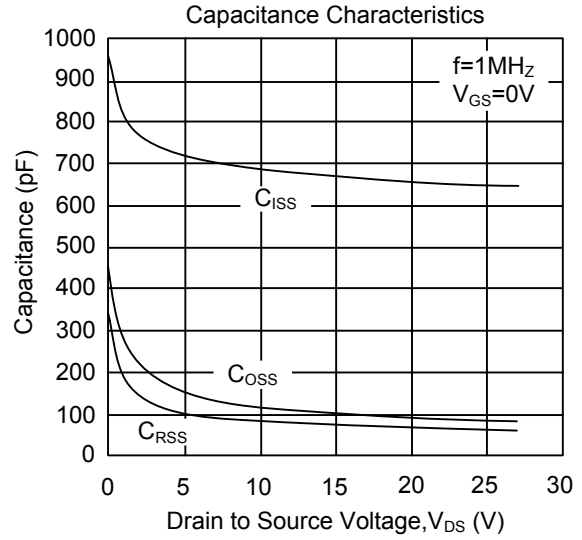
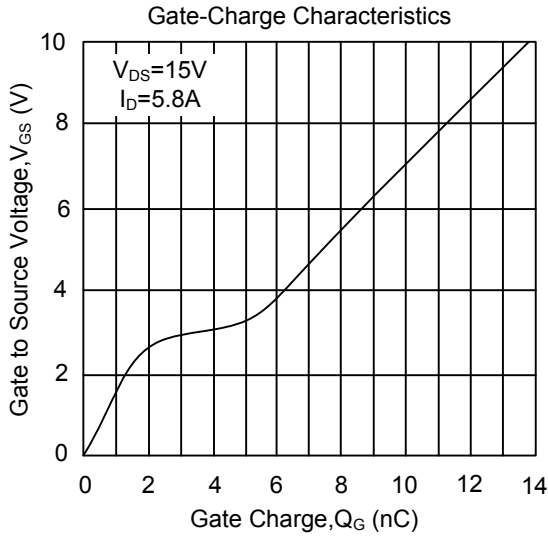
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.9	3	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=5.8\text{A}$		22.5	28	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}, I_D=5\text{A}$		34.5	43	$\text{m}\Omega$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=15\text{V}, f=1.0\text{MHz}$		680	820	pF
Output Capacitance	C_{OSS}			102		pF
Reverse Transfer Capacitance	C_{RSS}			77		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, R_G=3\Omega, R_D=2.7\Omega$		4.6	6.5	ns
Turn-ON Rise Time	t_R			3.8	5.7	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20.9	30	ns
Turn-OFF Fall Time	t_F			5	7.5	ns
Total Gate Charge (Note 2)	Q_G	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=5.8\text{A}$		13.88	17	nC
Gate-Source Charge	Q_{GS}			1.8		nC
Gate-Drain Charge	Q_{GD}			3.12		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	$I_S=1\text{A}$		0.76	1	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				2.5	A
Reverse Recovery Time	t_{RR}	$I_F=5.8\text{A}, dI/dt=100\text{A}/\mu\text{s}$		16.1	21	ns
Reverse Recovery Charge	Q_{RR}			7.4	10	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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