



## UT4404

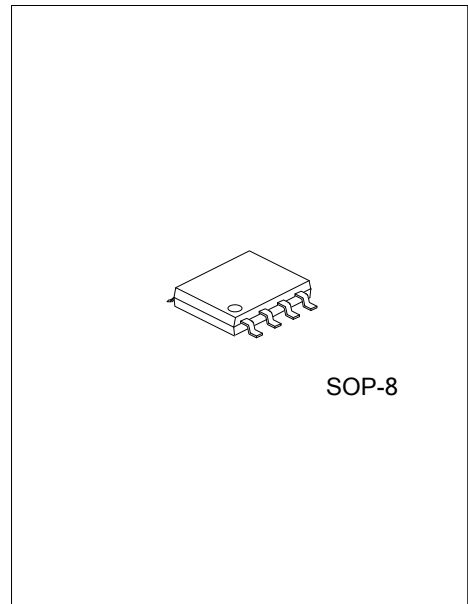
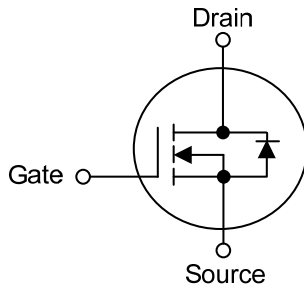
Power MOSFET

### N-CHANNEL ENHANCEMENT MODE

#### DESCRIPTION

The UTC **UT4404** provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V by using advanced trench technology. The UTC **UT4404** is suitable for use in PWM applications and as a load switch. Separating the source leads is to allow a Kelvin connection to the source to bypass the source inductance.

#### SYMBOL



SOP-8

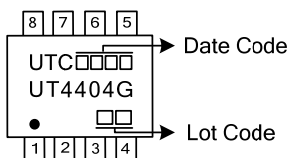
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UT4404G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT4404G-S08-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free</p>
---	--

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V <sub>DS</sub>	30	V	
Gate-Source Voltage	V <sub>GS</sub>	±12	V	
Continuous Drain Current (Note 2)	I <sub>D</sub>	T <sub>A</sub> =25°C	8.5	A
		T <sub>A</sub> =70°C	7.1	A
Pulsed Drain Current (Note 2)	I <sub>DM</sub>	60	A	
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	2.8	W
		T <sub>A</sub> =70°C	1.8	W
Junction Temperature	T <sub>J</sub>	+150	°C	
Storage Temperature	T <sub>STG</sub>	-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 T<sub>J</sub>

■ THERMAL DATA

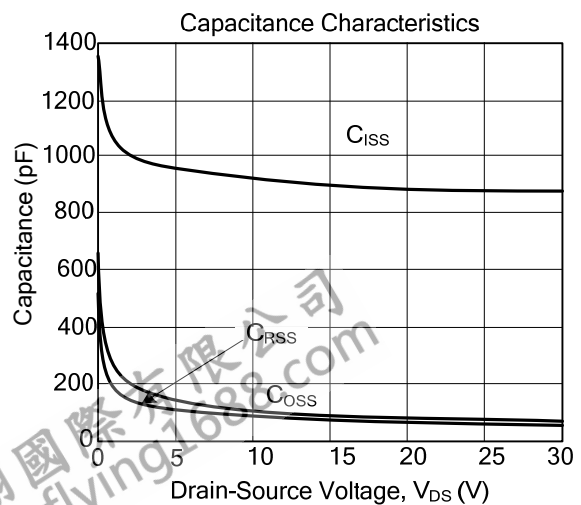
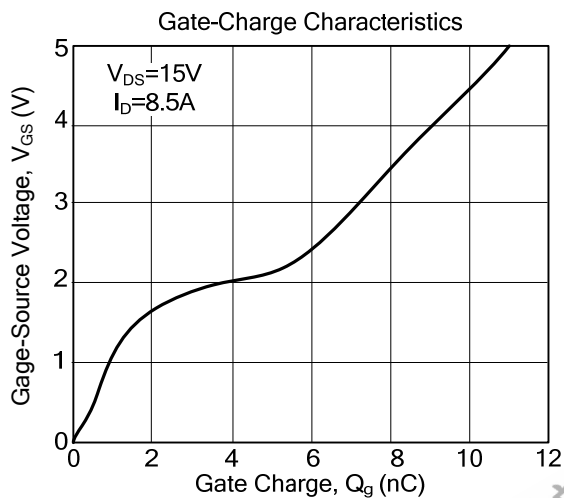
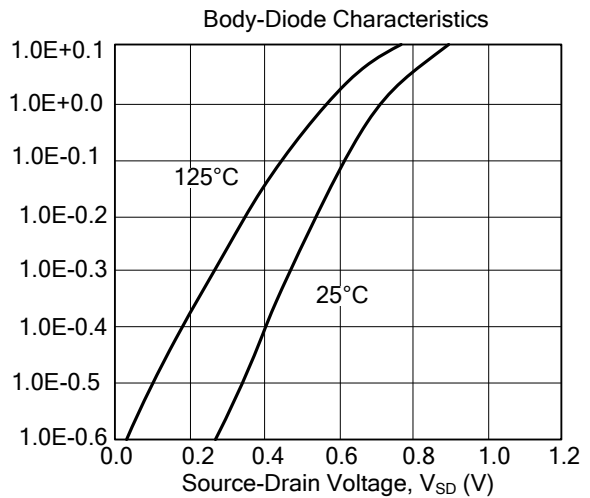
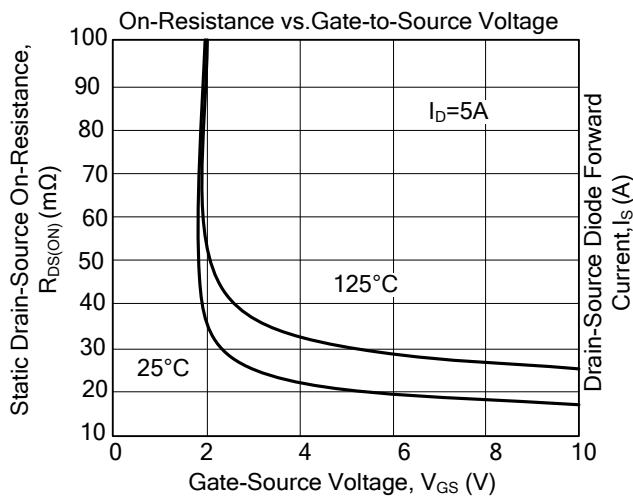
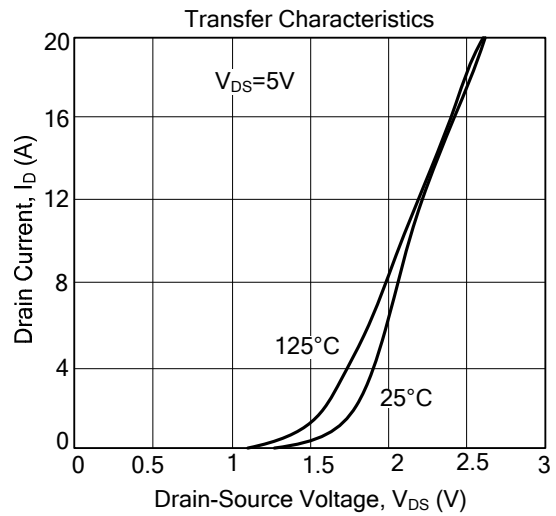
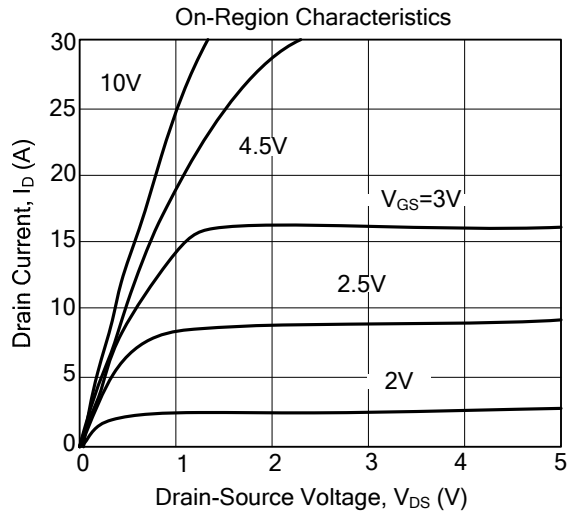
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ <sub>JA</sub>		70	100	°C/W

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

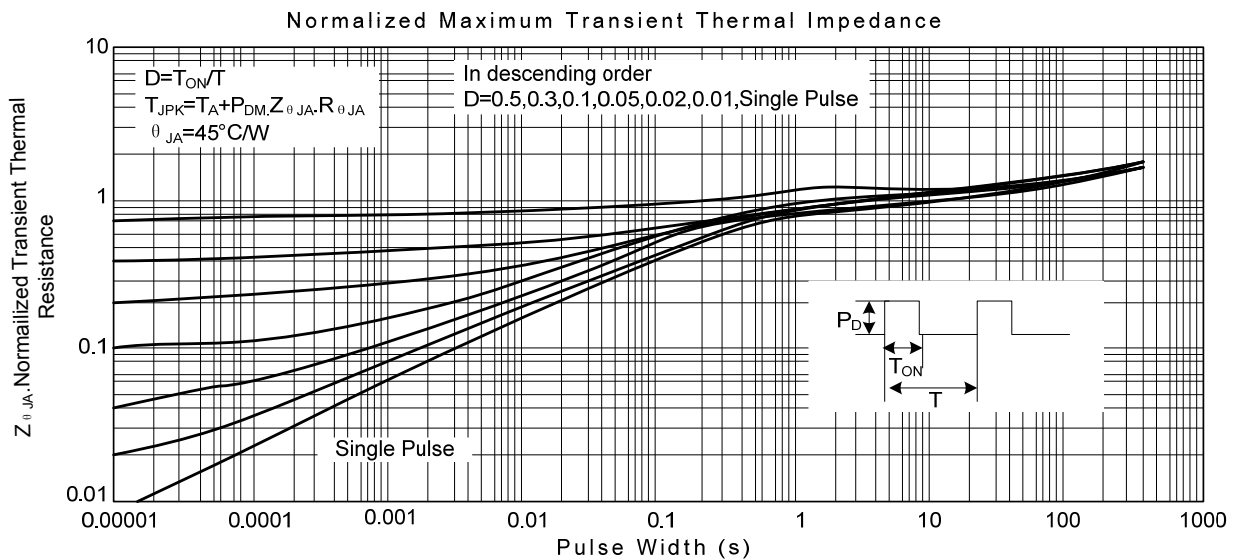
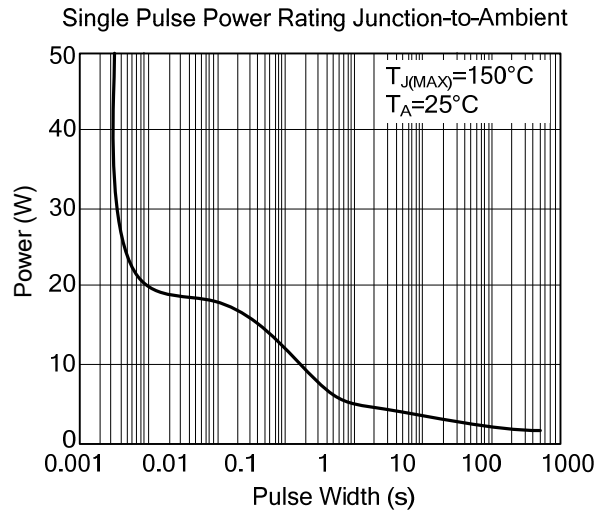
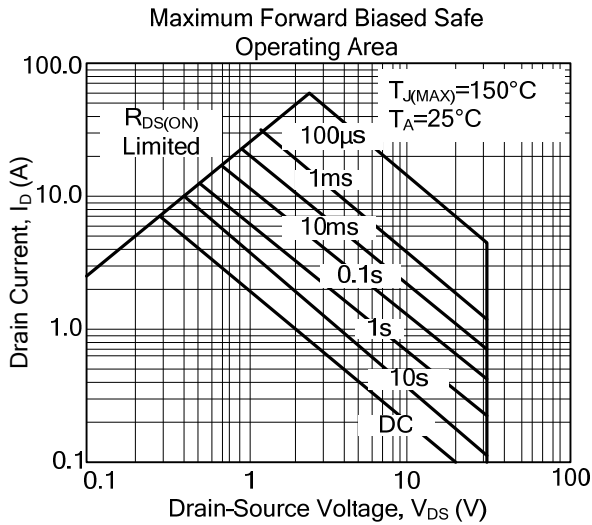
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0 V, I <sub>D</sub> =250μA	30			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =24 V, V <sub>GS</sub> =0V		0.002	1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0 V, V <sub>GS</sub> = ±12V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.7	1	1.4	V
On state drain current	I <sub>D(ON)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =5V	40			A
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10 V, I <sub>D</sub> =8.5A		18	24	mΩ
		V <sub>GS</sub> =4.5 V, I <sub>D</sub> =8.5A		22	30	mΩ
		V <sub>GS</sub> = 2.5V, I <sub>D</sub> =5A		32	48	mΩ
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15 V, V <sub>GS</sub> =0V, f=1MHz		857		pF
Output Capacitance	C <sub>OSS</sub>			97		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			71		pF
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.4		Ω
<b>SWITCHING PARAMETERS</b>						
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V R <sub>L</sub> =1.8Ω, R <sub>GEN</sub> =6Ω		3.2		ns
Turn-ON Rise Time	t <sub>R</sub>			3.5		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			21.5		ns
Turn-OFF Fall-Time	t <sub>F</sub>			2.7		ns
Total Gate Charge	Q <sub>G</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =8.5A		10	12	nC
Gate-Source Charge	Q <sub>GS</sub>			1.8		nC
Gate-Drain Charge	Q <sub>GD</sub>			3.75		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A	0.71	1		V
Maximum Body-Diode Continuous Current	I <sub>S</sub>			4.5		A
Body Diode Reverse Recovery Time	t <sub>RR</sub>	I <sub>F</sub> =5A, di/dt =100A/μs		16.8	20	ns
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>	I <sub>F</sub> =5A, di/dt =100A/μs		8	12	nC

Notes: 1. Pulse Test: Pulse width ≤300μs, Duty cycle 0.5% max.  
2. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.