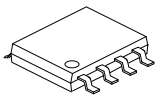
UT4404

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

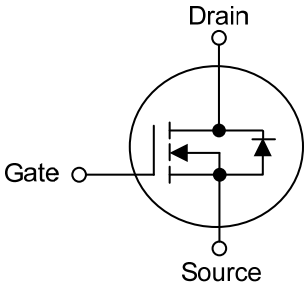


SOP-8

■ 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



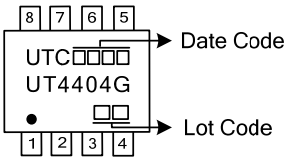
■ ORDERING INFORMATION

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

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

■ MARKING



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■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current (Note 2)	T_A=25°C	I_D	8.5	A
	T_A=70°C		7.1	A
Pulsed Drain Current (Note 2)		I_{DM}	60	A
Power Dissipation	T_A=25°C	P_D	2.8	W
	T_A=70°C		1.8	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-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_J

■ THERMAL DATA

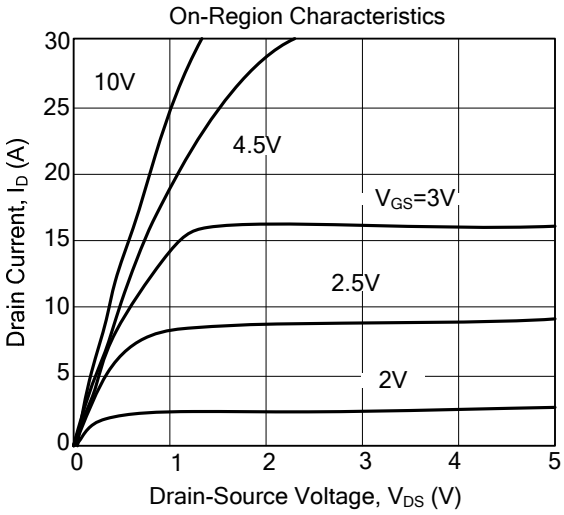
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ_{JA}		70	100	°C/W

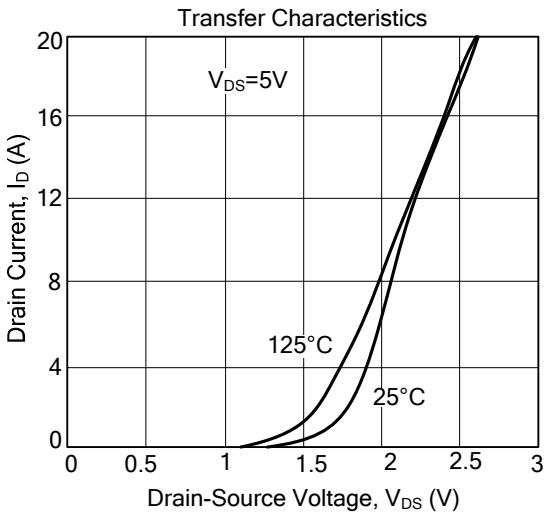
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

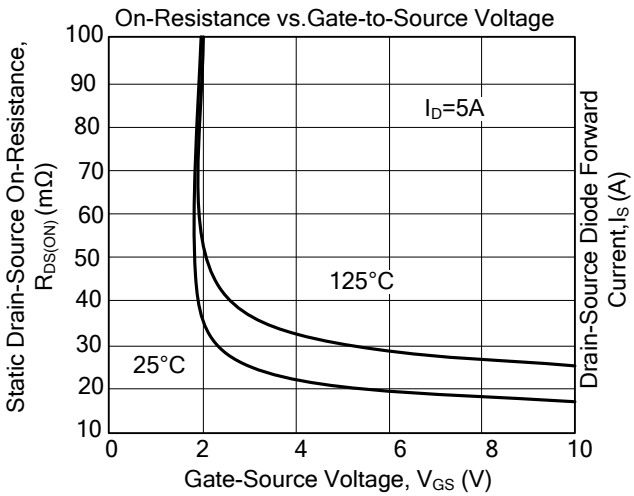
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =250μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =24 V, V_{GS} =0V		0.002	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS} =0 V, V_{GS} = ±12V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =250μA	0.7	1	1.4	V
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V, V_{DS}=5V	40			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10 V, I_D =8.5A		18	24	mΩ
		V_{GS} =4.5 V, I_D =8.5A		22	30	mΩ
		V_{GS} = 2.5V, I_D =5A		32	48	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS} =15 V, V_{GS} =0V, f=1MHz		857		pF
Output Capacitance	C_{OSS}			97		pF
Reverse Transfer Capacitance	C_{RSS}			71		pF
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz		1.4		Ω
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=10V,V_{DS}=15V R_L=1.8Ω, R_{GEN}=6Ω		3.2		ns
Turn-ON Rise Time	t_R			3.5		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			21.5		ns
Turn-OFF Fall-Time	t_F			2.7		ns
Total Gate Charge	Q_G	V_{DS} =15V, V_{GS} =4.5V, I_D =8.5A		10	12	nC
Gate-Source Charge	Q_{GS}			1.8		nC
Gate-Drain Charge	Q_{GD}			3.75		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A		0.71	1	V
Maximum Body-Diode Continuous Current	I_S				4.5	A
Body Diode Reverse Recovery Time	t_{RR}	I_F=5A, dI/dt =100A/μs		16.8	20	ns
Body Diode Reverse Recovery Charge	Q_{RR}	I_F=5A, dI/dt =100A/μs		8	12	nC

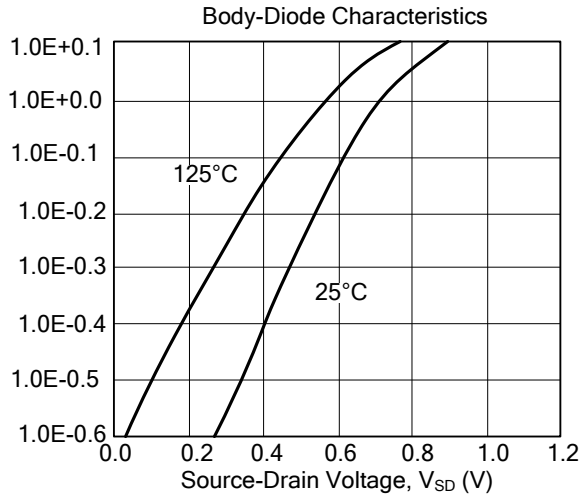
Notes: 1. Pulse Test: Pulse width≤300μs, Duty cycle 0.5% max.
2. Surface mounted on 1 in^2 copper pad of FR4 board

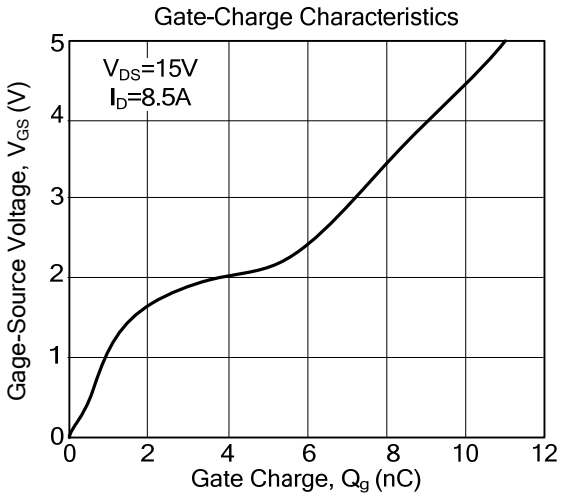
■ TYPICAL CHARACTERISTICS

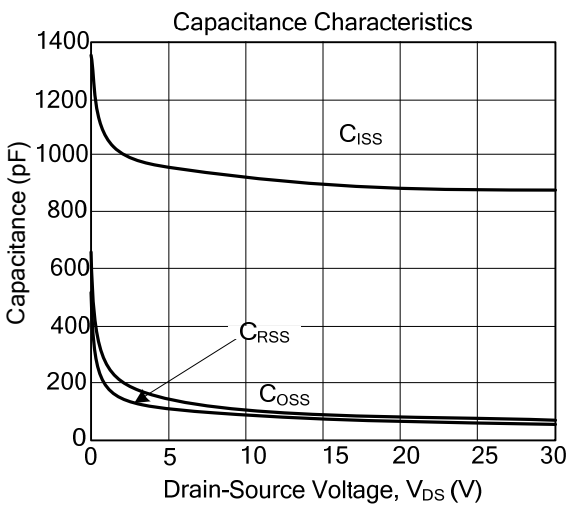






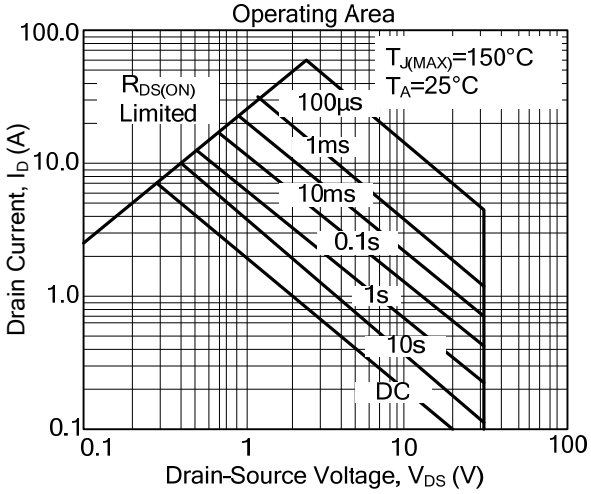




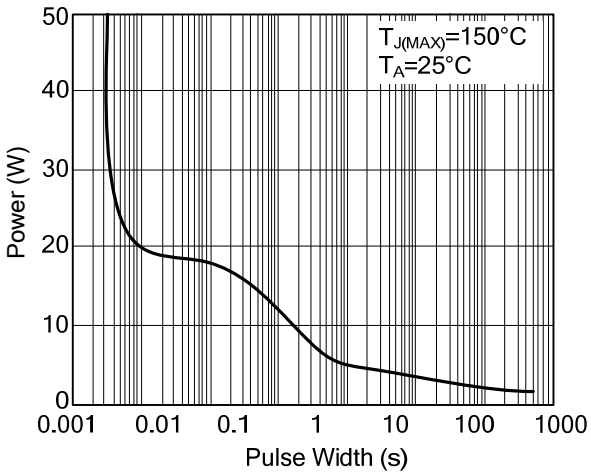


■ TYPICAL CHARACTERISTICS(Cont.)

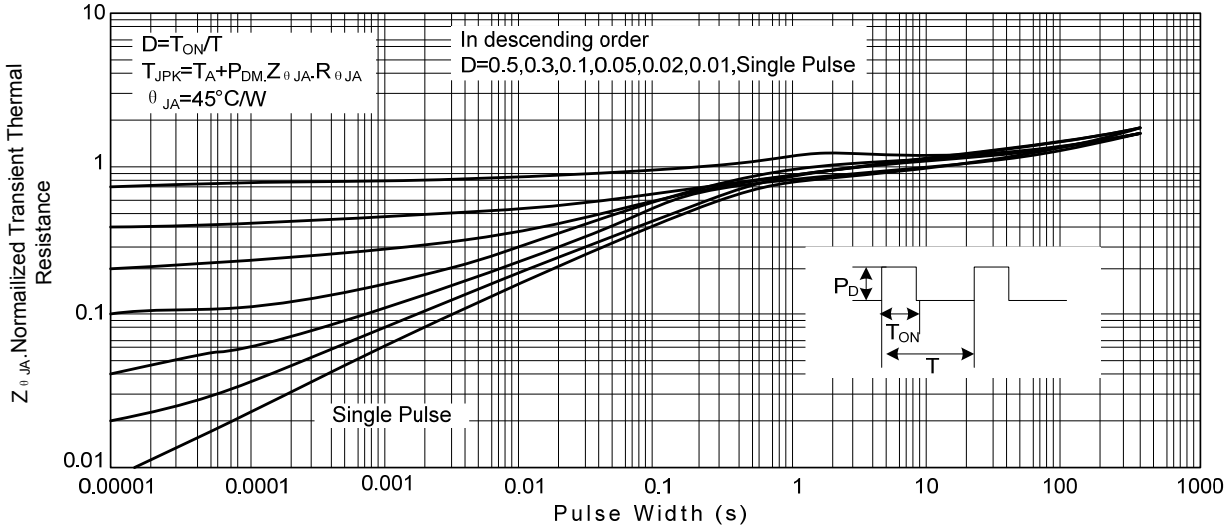
Maximum Forward Biased Safe Operating Area



Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance



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