

UT6402

Power MOSFET

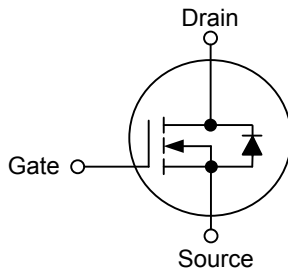
N-CHANNEL ENHANCEMENT MODE

DESCRIPTION

The **UT6402** is N-Channel enhancement mode Power MOSFET, designed with high density cell, with fast switching speed, low on-resistance, excellent thermal and electrical capabilities, operation with low gate voltages.

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

SYMBOL

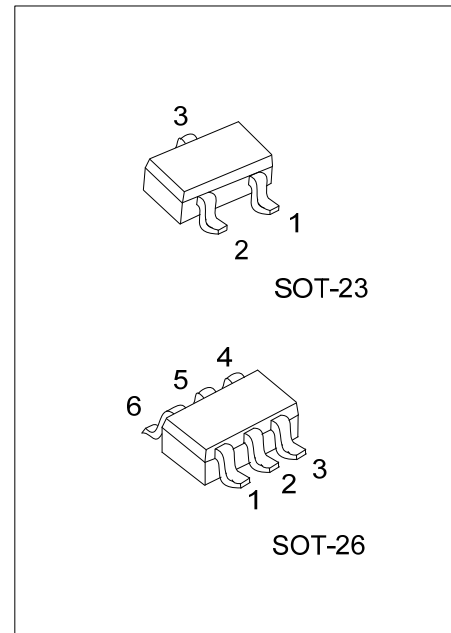
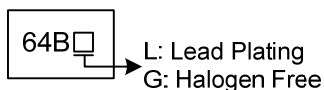


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free Plating	Halogen-Free		1	2	3	4	5	6	
UT6402L-AE3-R	UT6402G-AE3-R	SOT-23	S	G	D	-	-	-	Tape Reel
UT6402L-AG6-R	UT6402G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

<p>UT6402L-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Plating</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AG6: SOT-26</p> <p>(3) L: Lead Free Plating, G: Halogen 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	6.9	A
Pulsed Drain Current (Note 2)	I_{DM}	20	A
Power Dissipation	P_D	2	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 DATA

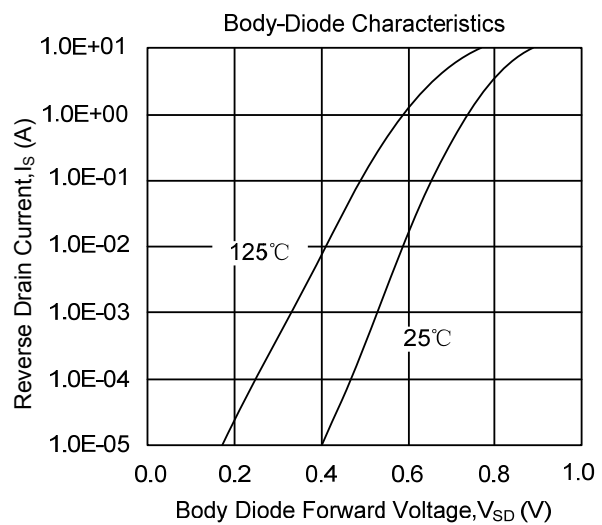
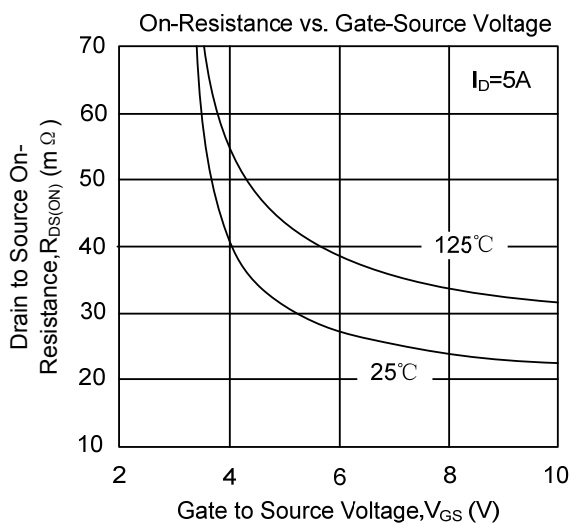
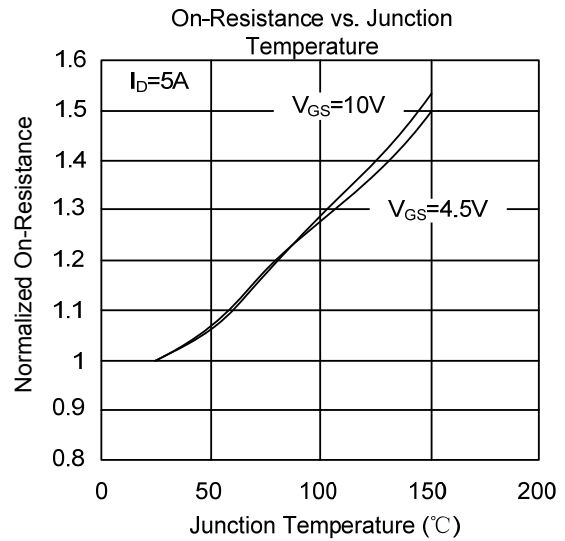
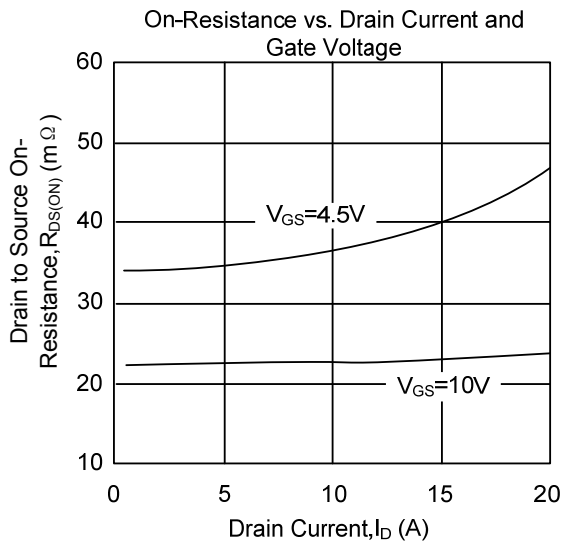
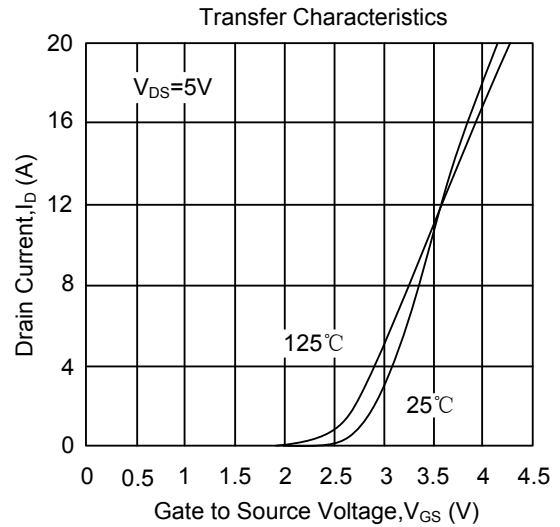
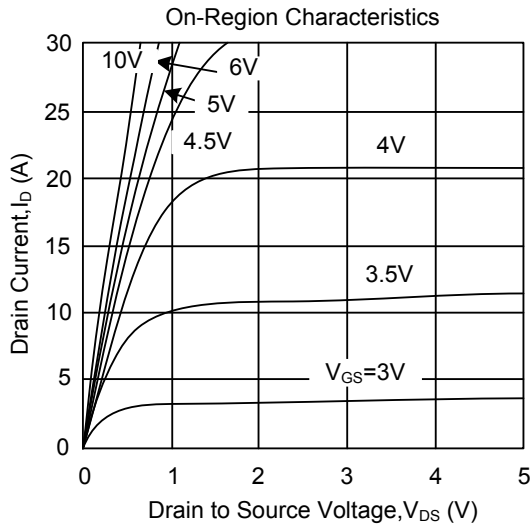
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ_{JA}		74	110	$^\circ\text{C/W}$

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

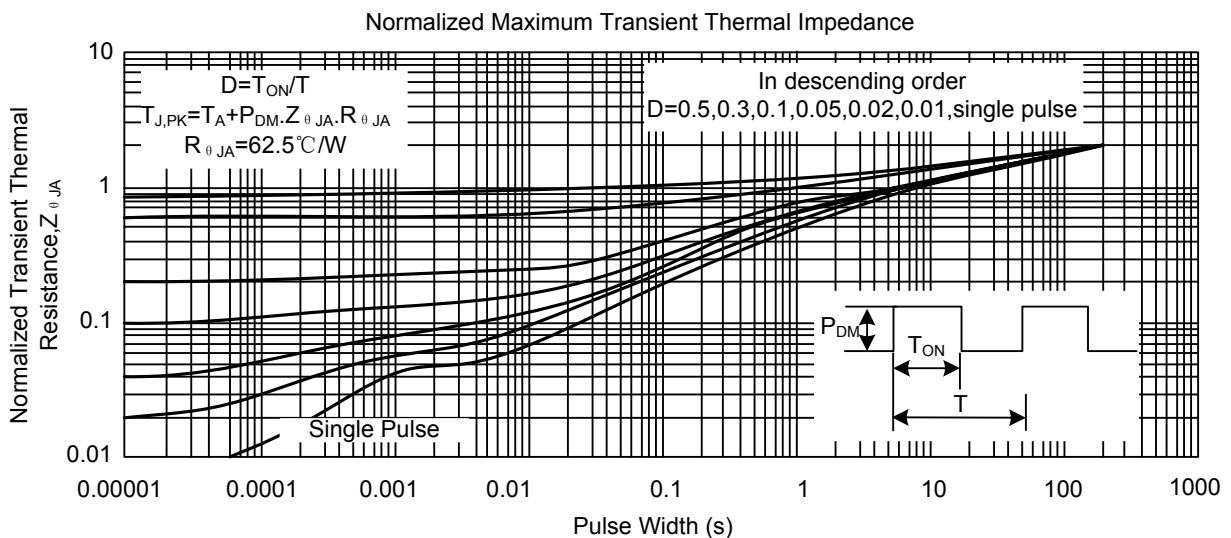
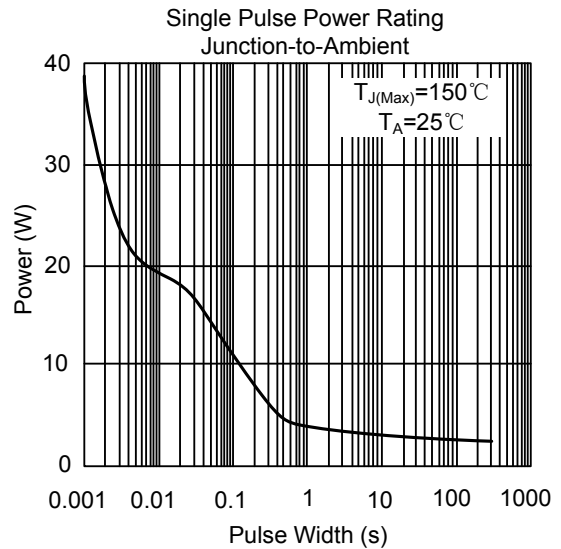
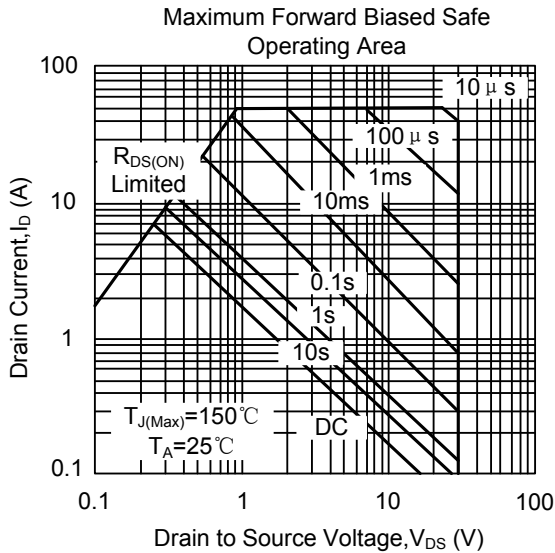
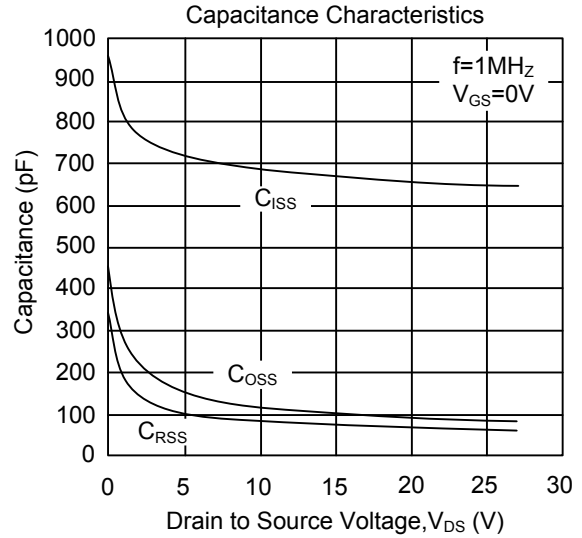
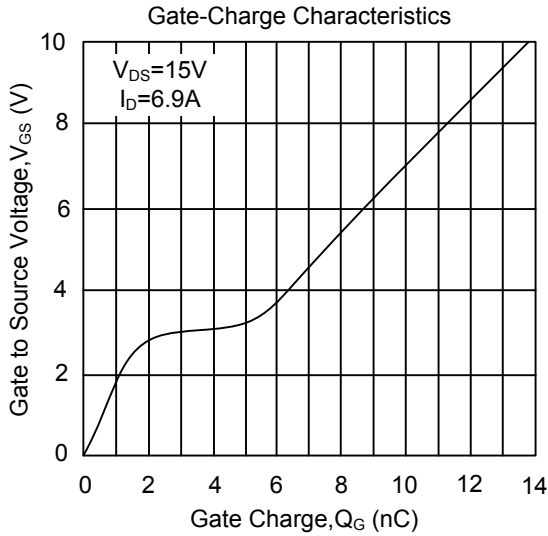
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30\text{V}, V_{GS} = 0\text{ V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$			± 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
On State Drain Current	$I_{D(ON)}$	$V_{DS} = 5\text{V}, V_{GS} = 4.5\text{V}$	20			A
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 6.9\text{A}$		22.5	28	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 5.0\text{A}$		34.5	42	m Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		680	820	pF
Output Capacitance	C_{OSS}			102		
Reverse Transfer Capacitance	C_{RSS}			77	108	
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, R_L = 2.2\Omega, R_G = 3\Omega$		4.6		ns
Turn-ON Rise Time	t_R			4.1		
Turn-OFF Delay Time	$t_{D(OFF)}$			20.6		
Turn-OFF Fall-Time	t_F			5.2		
Total Gate Charge (Note 2)	Q_G	$V_{DS} = 15\text{V}, V_{GS} = 10\text{V}, I_D = 6.9\text{A}$	11.5	13.88	16.7	nC
Gate Source Charge	Q_{GS}			1.82		
Gate Drain Charge	Q_{GD}			3.2		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = 1\text{A}$		0.76	1	V
Maximum Body-Diode Continuous Current	I_S				3	A
Reverse Recovery Time	t_{RR}	$I_F = 6.9\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$		16.5	20	ns
Reverse Recovery Charge	Q_{RR}	$I_F = 6.9\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$		7.8		nC

- Notes: 1. Pulse width limited by $T_{J(MAX)}$
 2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$.
 3. Surface mounted on 1 in² copper pad of FR4 board.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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