



UT6402

Power MOSFET

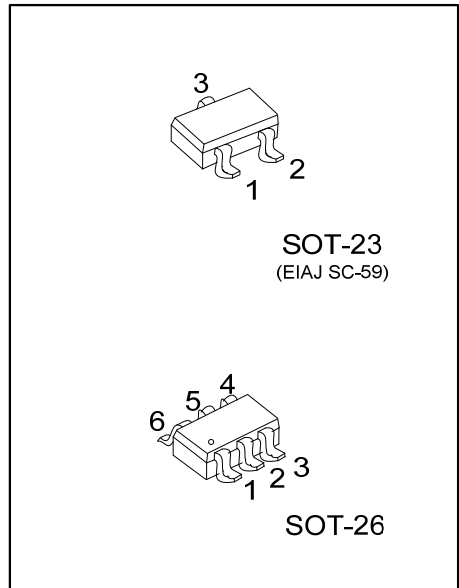
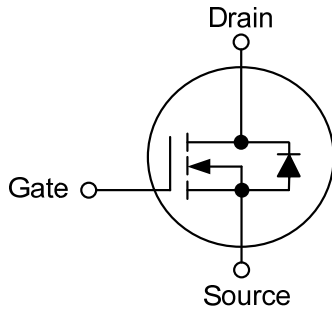
N-CHANNEL ENHANCEMENT MODE

■ 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	Halogen Free		1	2	3	4	5	6	
UT6402L-AE3-R	UT6402G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT6402L-AG6-R	UT6402G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UT6402G-AE3-R</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AG6: SOT-26</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23	SOT-26

■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^{\circ}\text{C}$, 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
Avalanche Energy	Single Pulsed (Note 3)	EAS	2
Power Dissipation	P_D	0.7	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Strong Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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 maximum junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=6.4\text{A}$, $V_{DD}=25\text{V}$, $R_G=25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	178	$^{\circ}\text{C/W}$

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

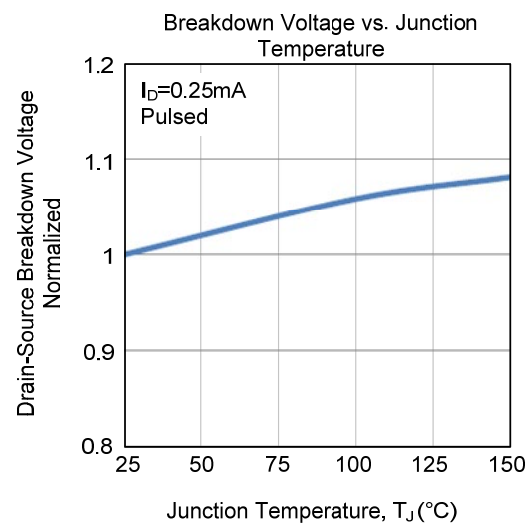
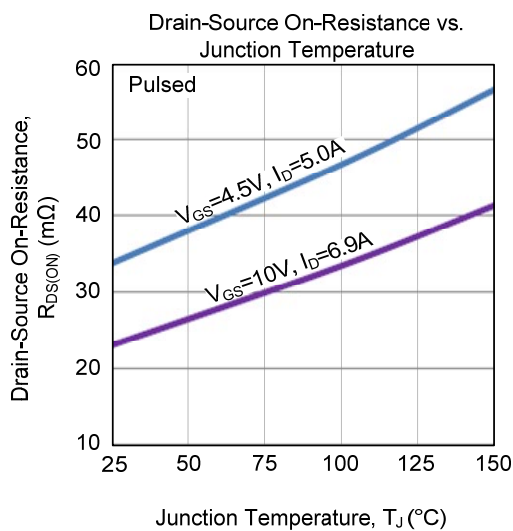
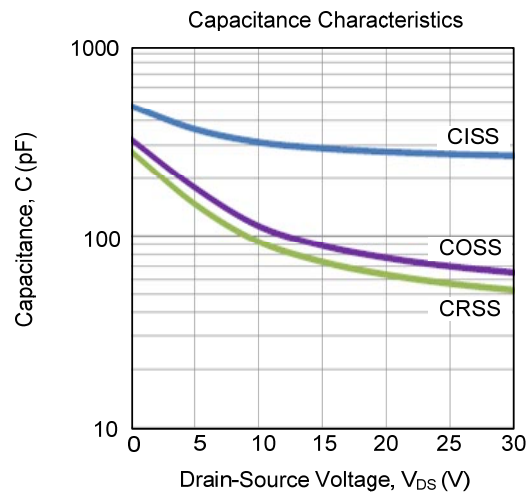
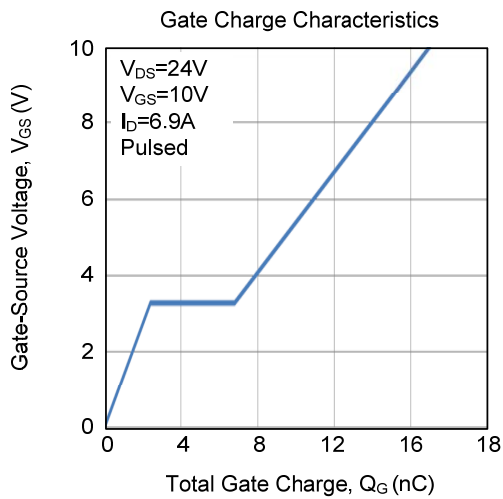
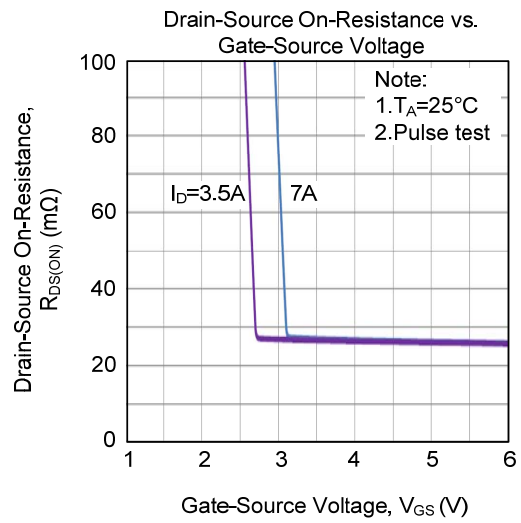
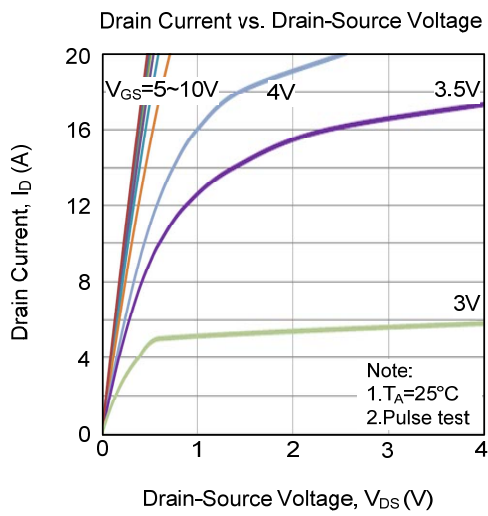
■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

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	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0	1.9	3.0	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	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$, $I_D=5.0\text{A}$		34.5	42	$\text{m}\Omega$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{DS}=15\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		265		pF
Output Capacitance	C_{OSS}			70		
Reverse Transfer Capacitance	C_{RSS}			56		
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	$V_{DS}=24\text{V}$, $V_{GS}=10\text{V}$, $I_D=6.9\text{A}$ (Note 1,2)		17		nC
Gate Source Charge	Q_{GS}			2.4		
Gate Drain Charge	Q_{GD}			4.4		
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DD}=15\text{V}$, $V_{GS}=10\text{V}$, $I_D=6.9\text{A}$, $R_G=3.3\Omega$ (Note 1,2)		5		ns
Turn-ON Rise Time	t_R			15		
Turn-OFF Delay Time	$t_{D(OFF)}$			13		
Turn-OFF Fall-Time	t_F			22		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				3	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=1.0\text{A}$		0.76	1	V

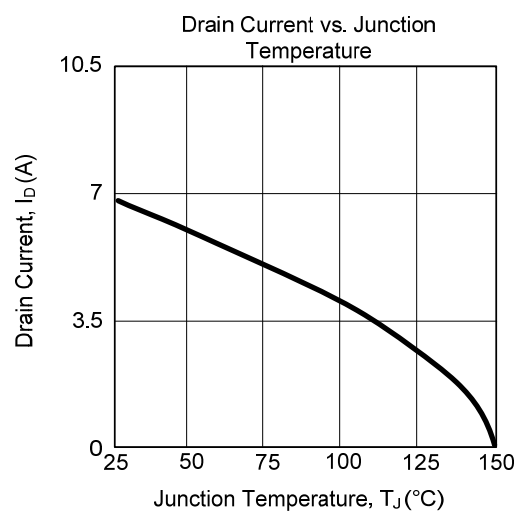
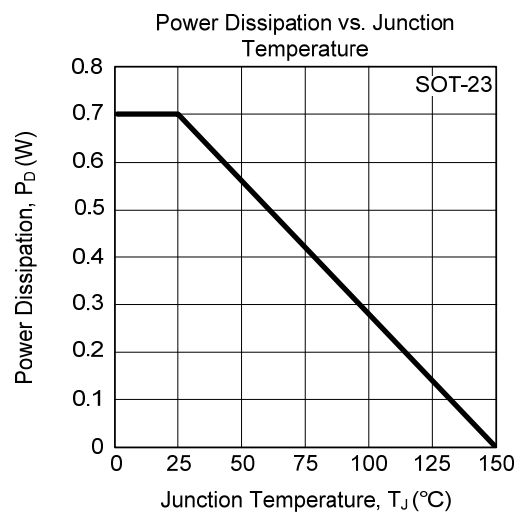
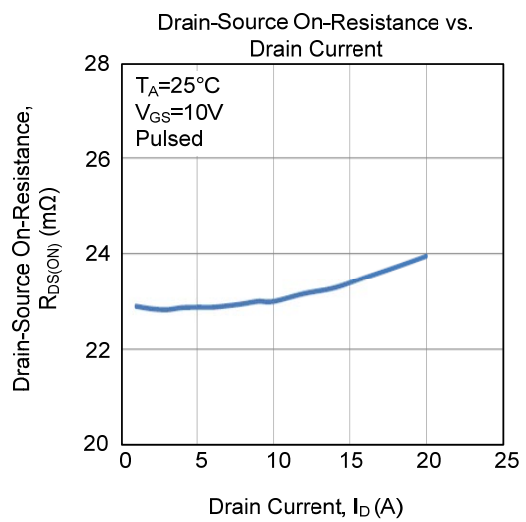
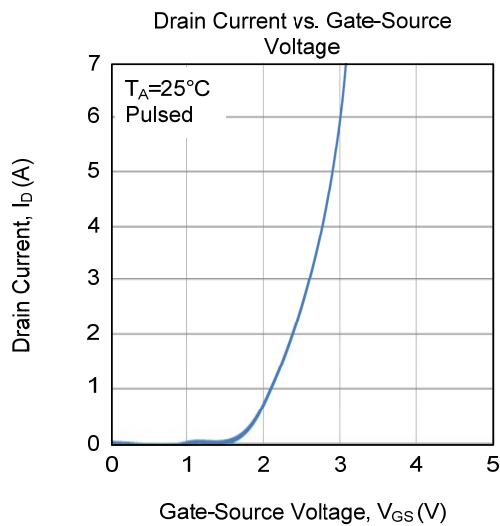
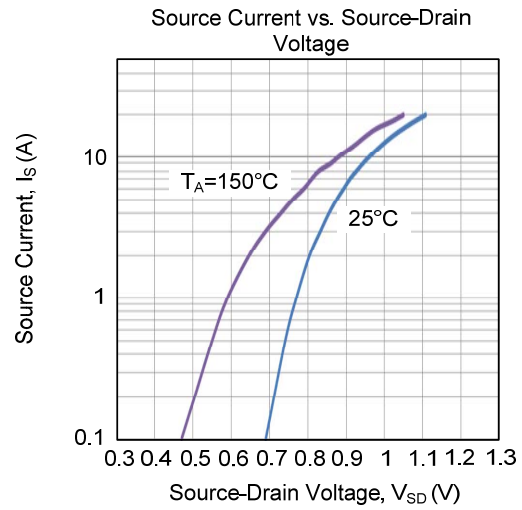
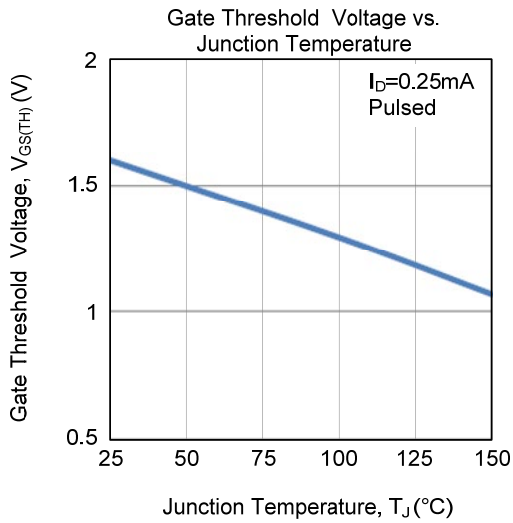
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature

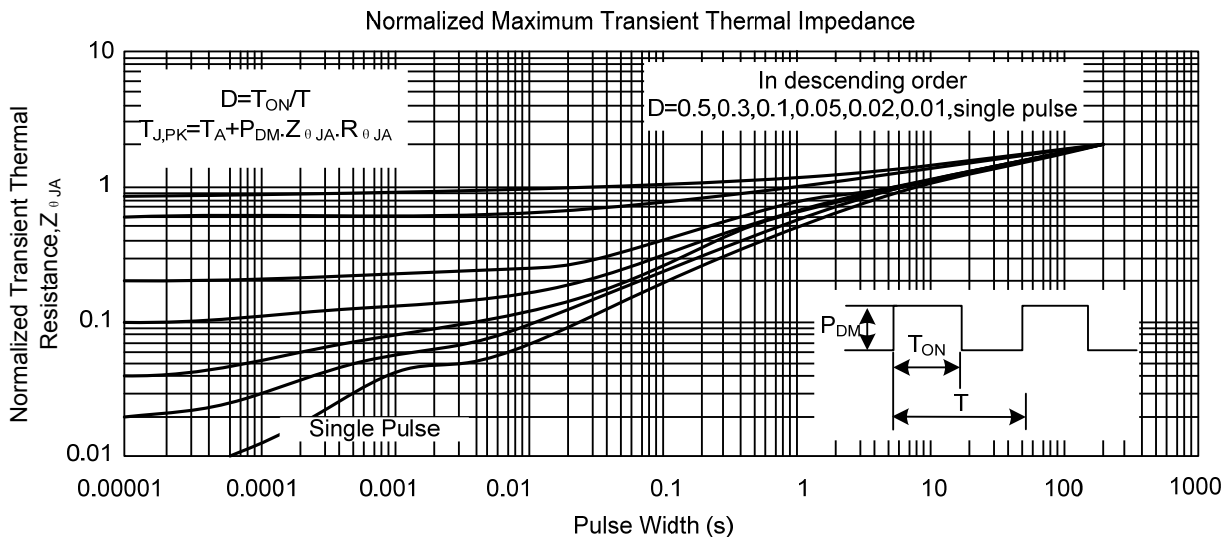
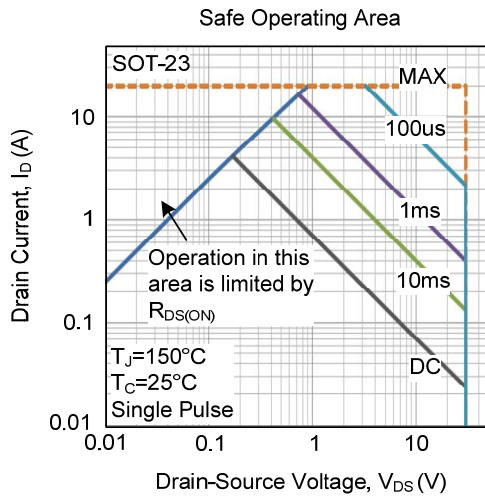
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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