



UT6401

Power MOSFET

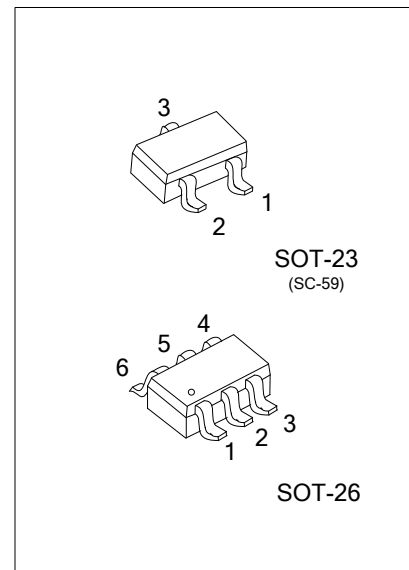
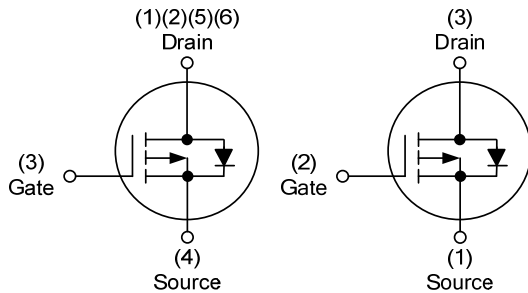
5A, 30V P-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

The UTC **UT6401** is P-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 charge.

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

■ SYMBOL



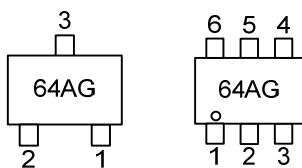
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UT6401G-AE3-R	SOT-23	S	G	D	-	-	-	Tape Reel
UT6401G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UT6401G-AG6-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AG6: SOT-26, AE3: SOT-23 (3) G: Halogen Free and Lead Free
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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_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current (Note 3)	I_D	-5	A
Pulsed Drain Current (Note 2)	I_{DM}	-20	
Power Dissipation	SOT-23	1.38	W
	SOT-26	2	
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)	SOT-23			90	$^\circ\text{C/W}$
	SOT-26			110	

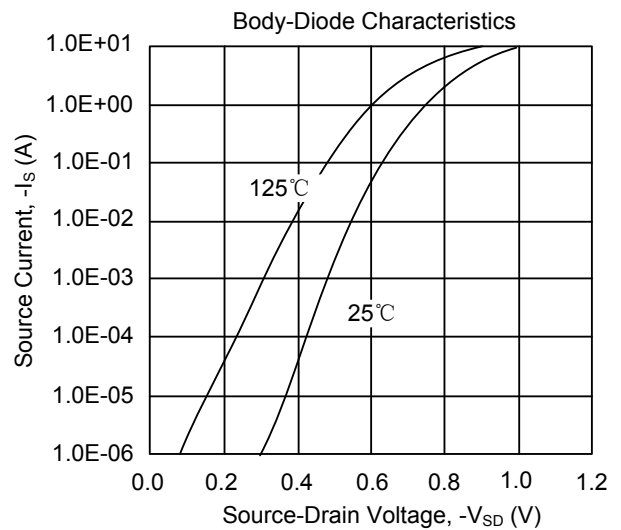
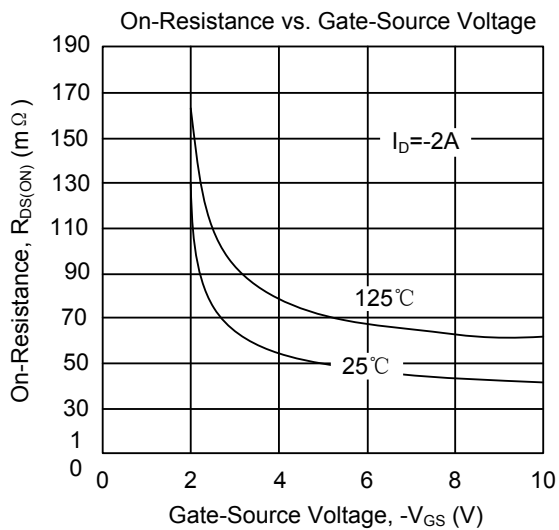
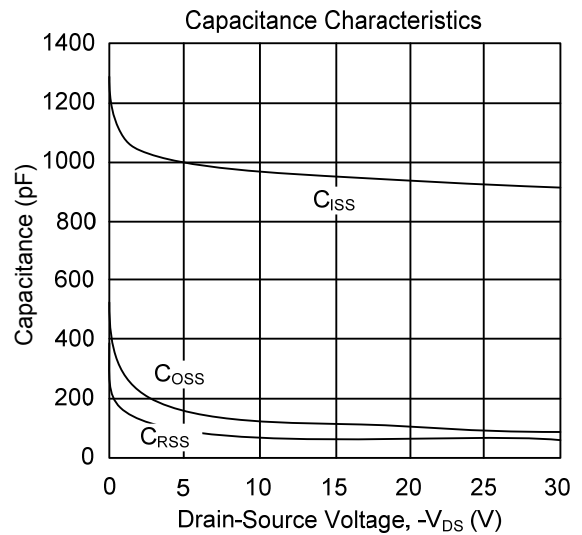
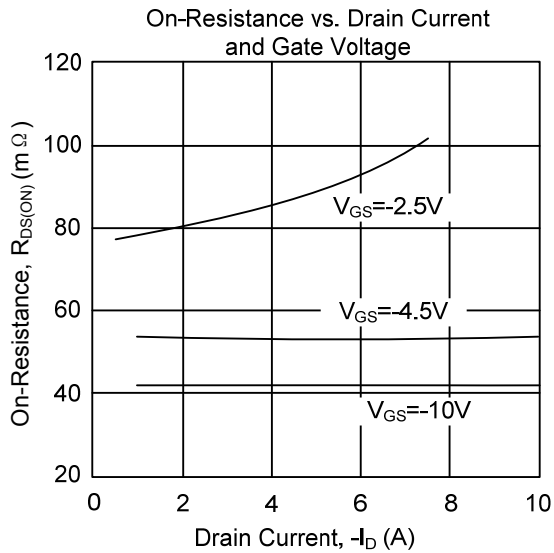
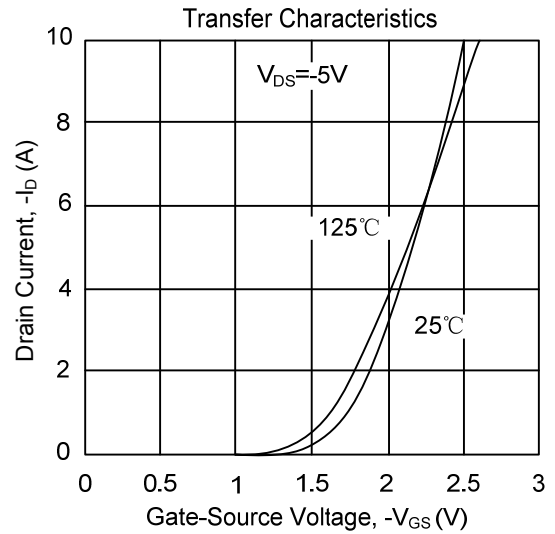
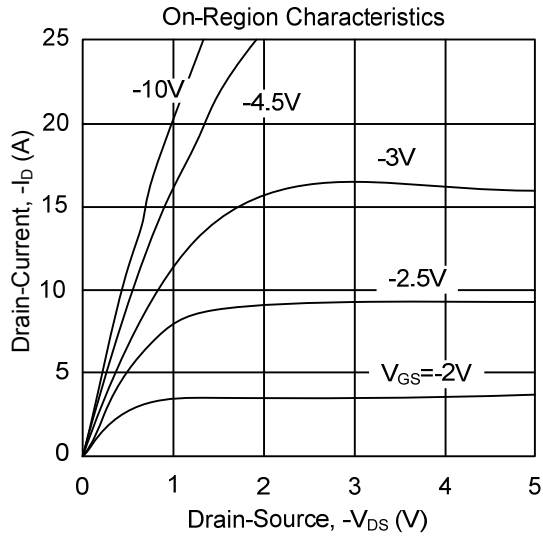
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-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}	$V_{DS}=0\text{V}, V_{GS}=\pm 12\text{V}$			± 100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.7	-1	-1.3	V
On State Drain Current	$I_{D(ON)}$	$V_{DS}=-5\text{V}, V_{GS}=-4.5\text{V}$	-25			A
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=-10\text{V}, I_D=-5\text{A}$		42	49	m Ω
		$V_{GS}=-4.5\text{V}, I_D=-4\text{A}$		53	64	m Ω
		$V_{GS}=-2.5\text{V}, I_D=-1\text{A}$		81	119	m Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=-15\text{V}, f=1.0\text{MHz}$		943		pF
Output Capacitance	C_{OSS}			108		pF
Reverse Transfer Capacitance	C_{RSS}			73		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=-15\text{V}, V_{GS}=-10\text{V}, R_G=6\Omega, R_L=3\Omega$		6		ns
Turn-ON Rise Time	t_R			3		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			40		ns
Turn-OFF Fall Time	t_F			11		ns
Total Gate Charge (Note 2)	Q_G	$V_{DS}=-15\text{V}, V_{GS}=-4.5\text{V}, I_D=-5\text{A}$		9.5		nC
Gate-Source Charge	Q_{GS}			2.1		nC
Gate-Drain Charge	Q_{GD}			2.9		nC
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	$I_S=-1\text{A}, V_{GS}=0\text{V}$		-0.75	-1	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				-5	A
MAXIMUM Body-Diode Pulsed Current	I_{SM}				-20	A

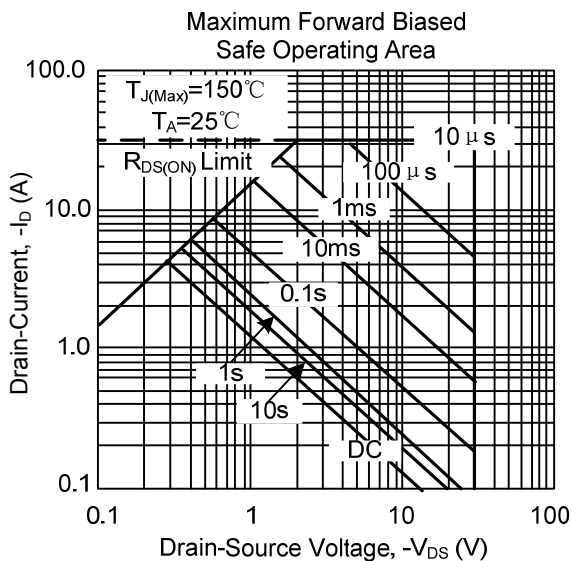
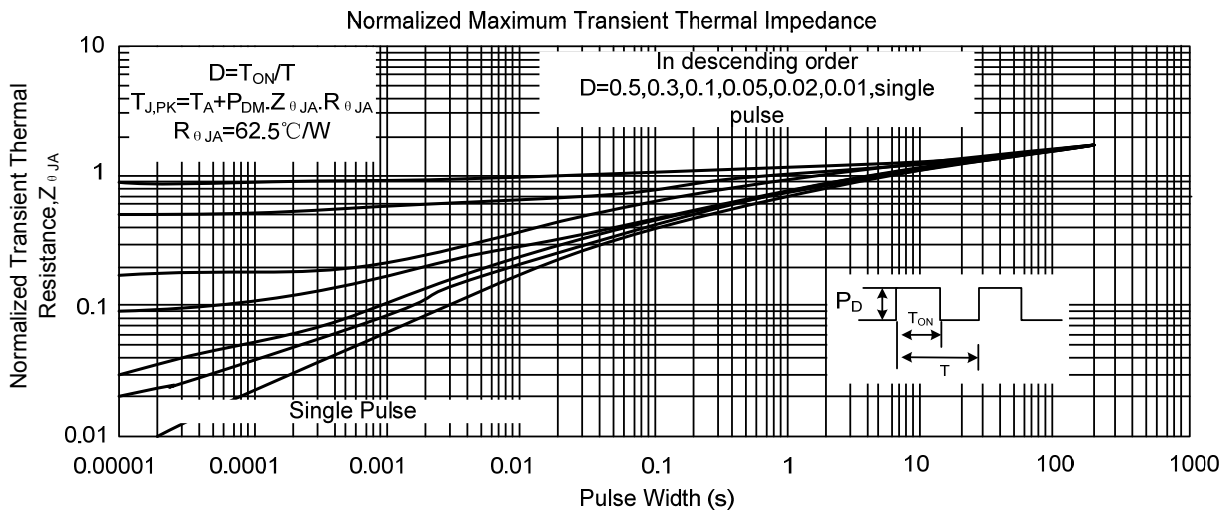
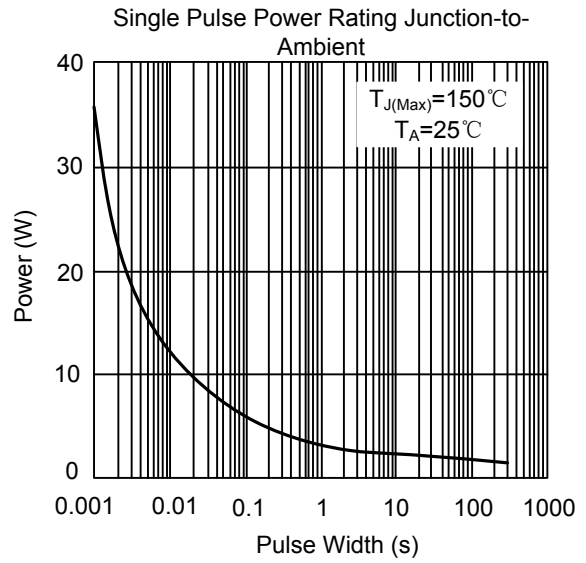
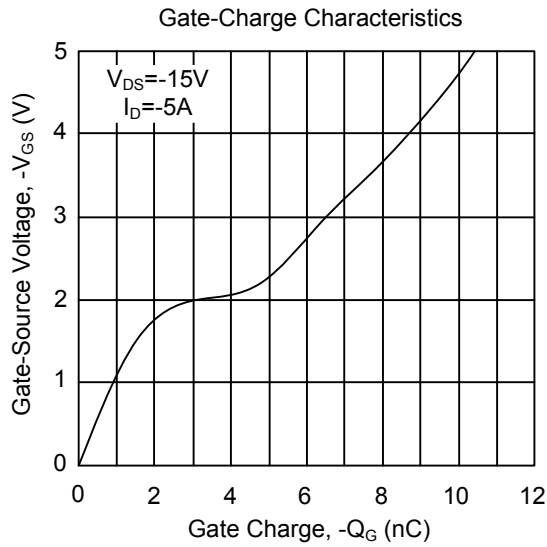
Notes: 1. Pulse width limited by $T_{J(MAX)}$

2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 0.5\%$.

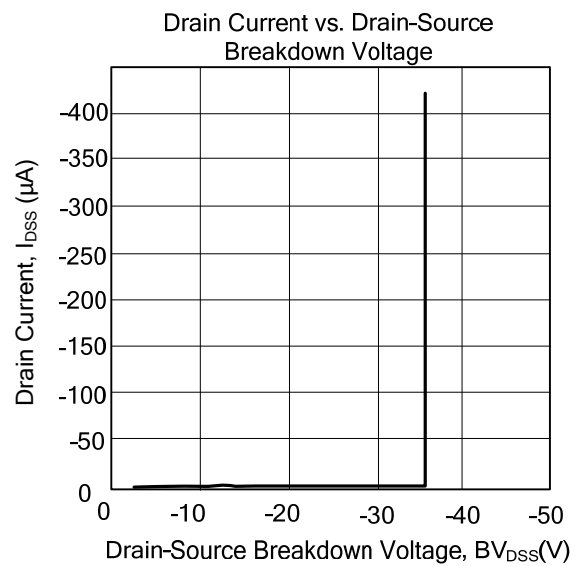
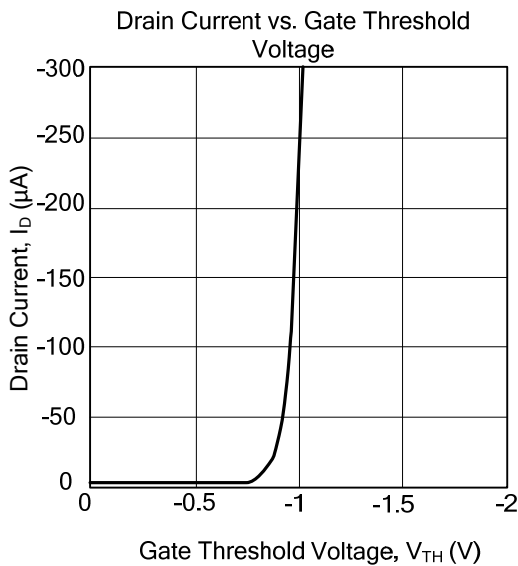
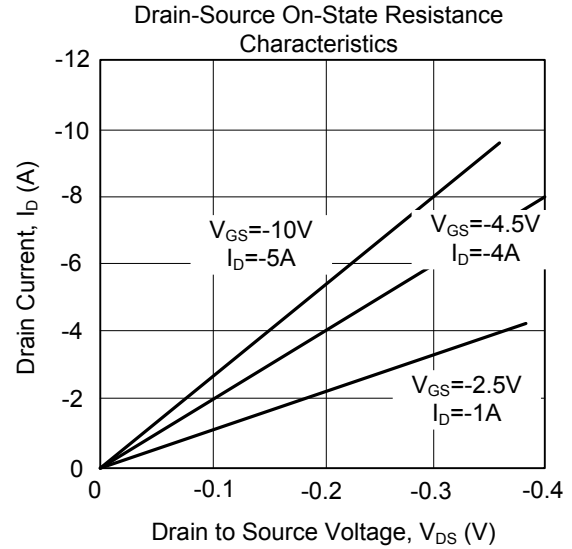
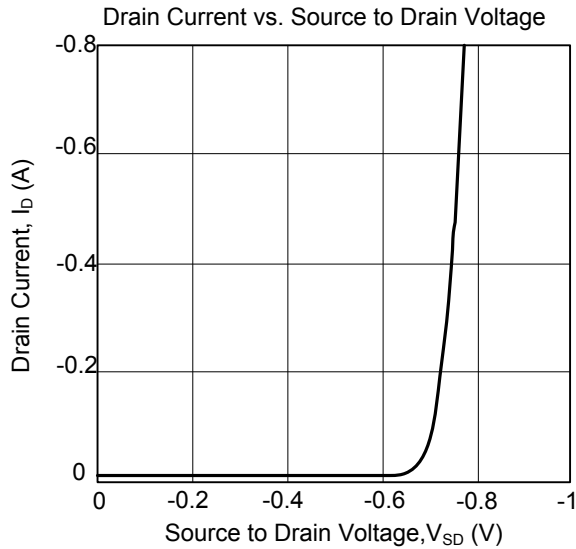
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



TYPICAL CHARACTERISTICS



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