



UT6401

Power MOSFET

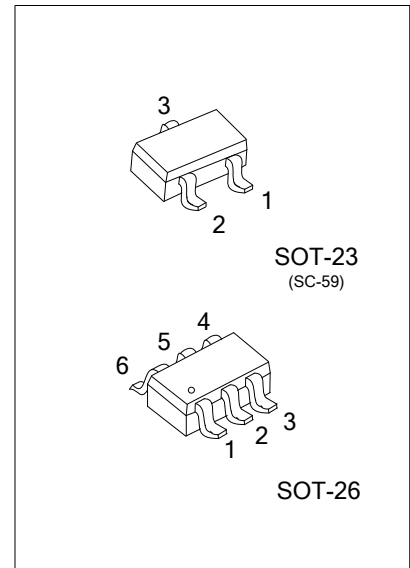
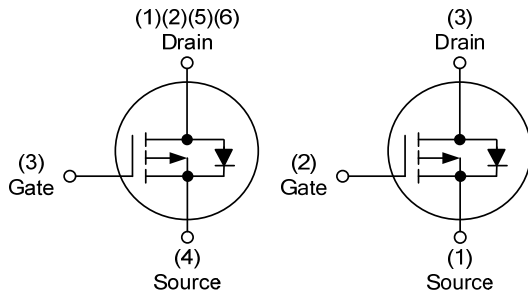
5A, 30V P-CHANNEL ENHANCEMENT MODE

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



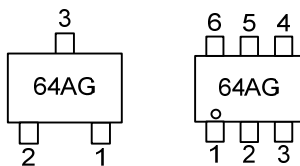
ORDERING INFORMATION

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

UT6401G-AG6-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AG6: SOT-26, AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free

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	P_D	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	θ_{JA}			90	$^\circ\text{C/W}$
	SOT-26				110	

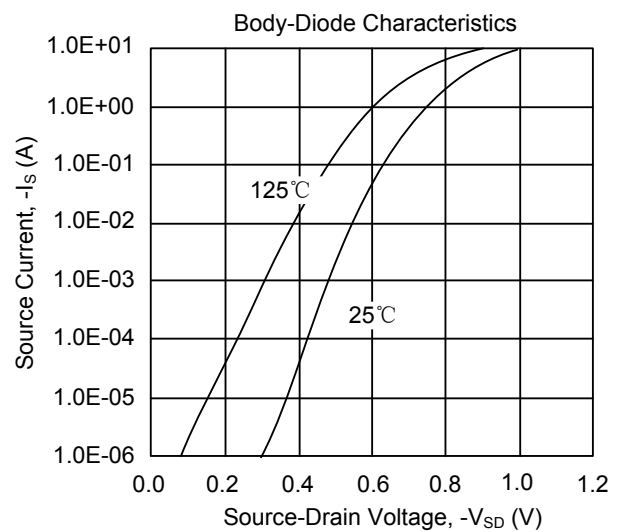
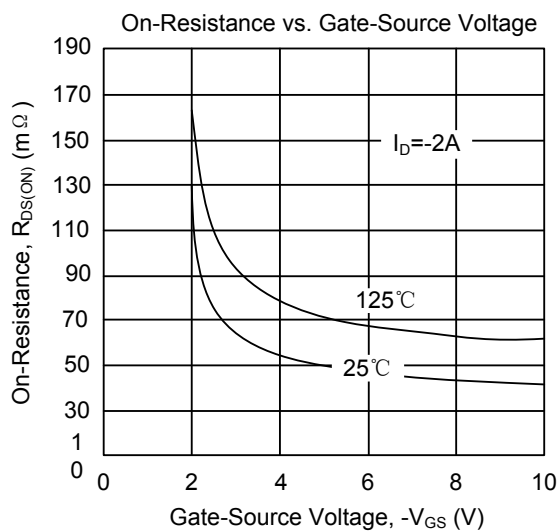
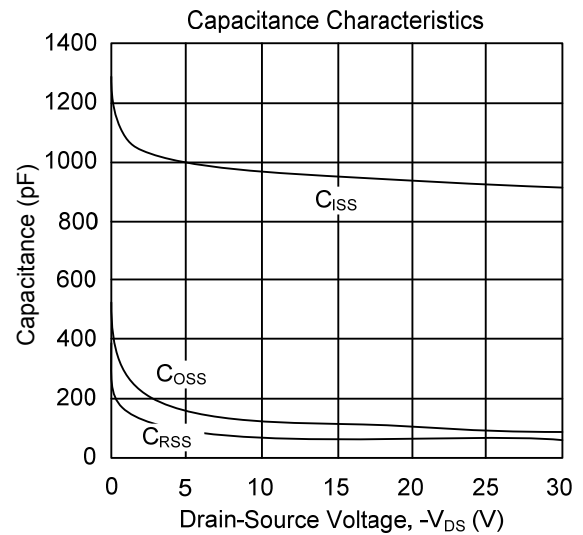
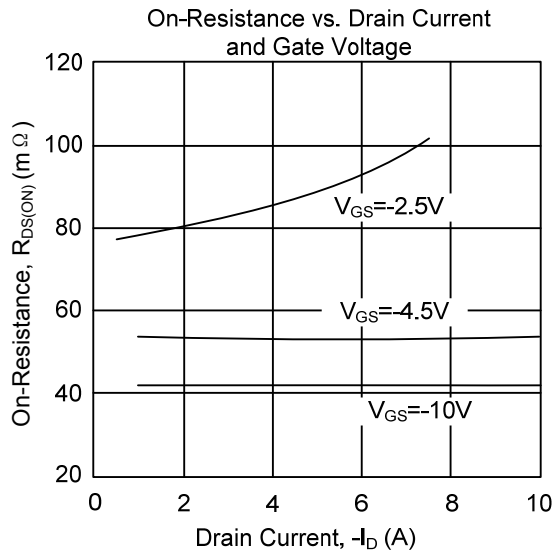
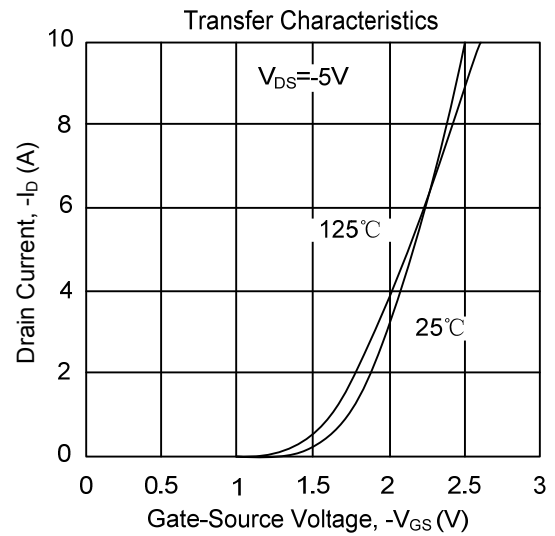
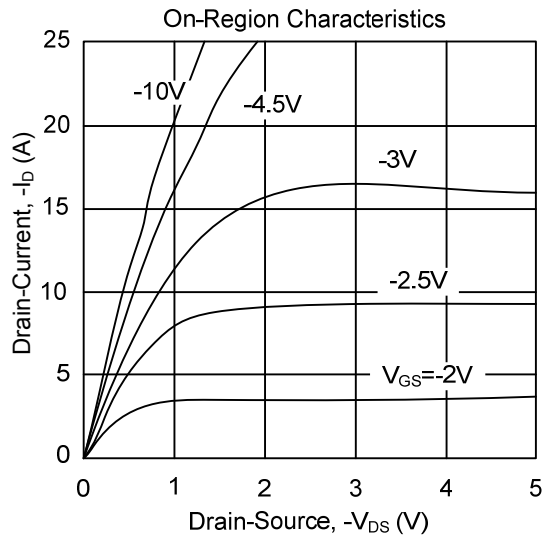
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250uA	-0.7	-1	-1.3	V
On State Drain Current	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-4.5V	-25			A
Static Drain-Source On-Resistance (Note 2)	R _{DS(ON)}	V _{GS} =-10V, I _D =-5A		42	49	mΩ
		V _{GS} =-4.5V, I _D =-4A		53	64	mΩ
		V _{GS} =-2.5V, I _D =-1A		81	119	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-15V, f=1.0MHz		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} =-15V, V _{GS} =-10V, R _G =6Ω, R _L =3Ω		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} =-15V, V _{GS} =-4.5V, I _D =-5A		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 =-1A, V _{GS} =0V		-0.75	-1	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				-5	A
MAXIMUN Body-Diode Pulsed Current	I _{SM}				-20	A

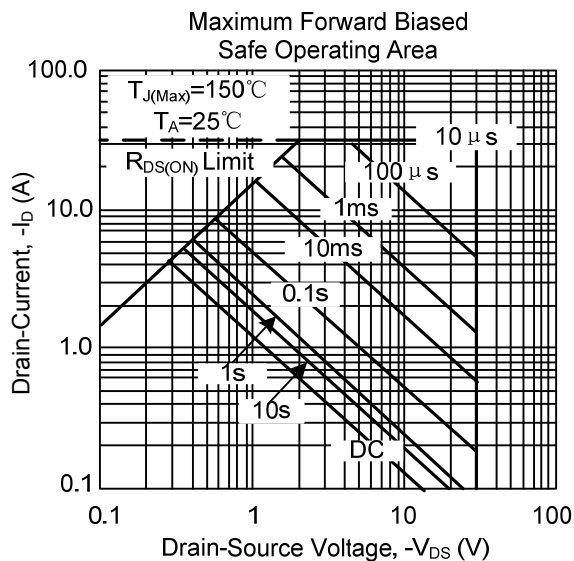
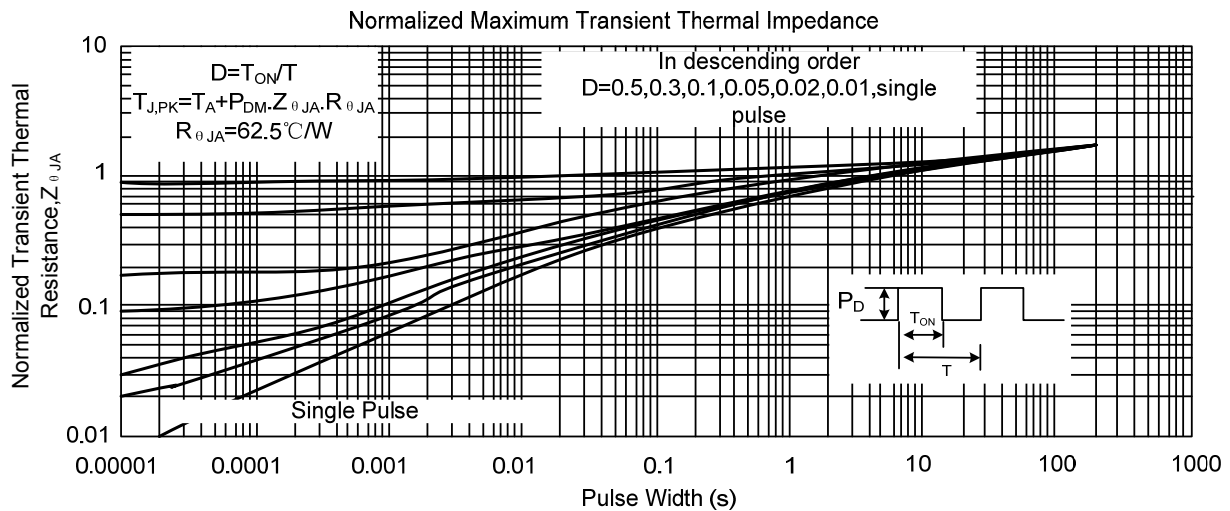
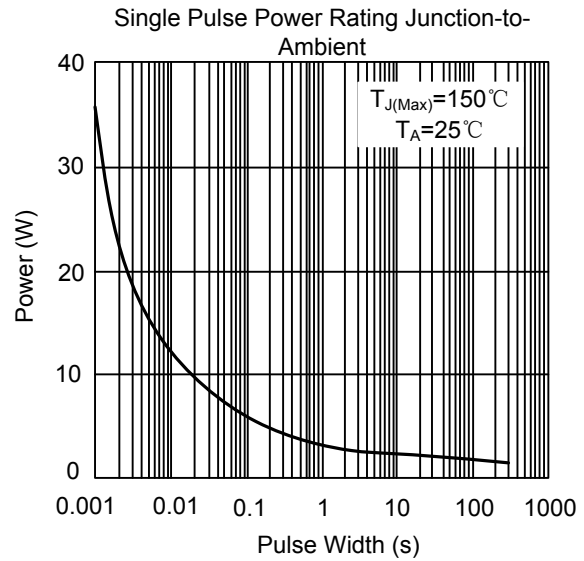
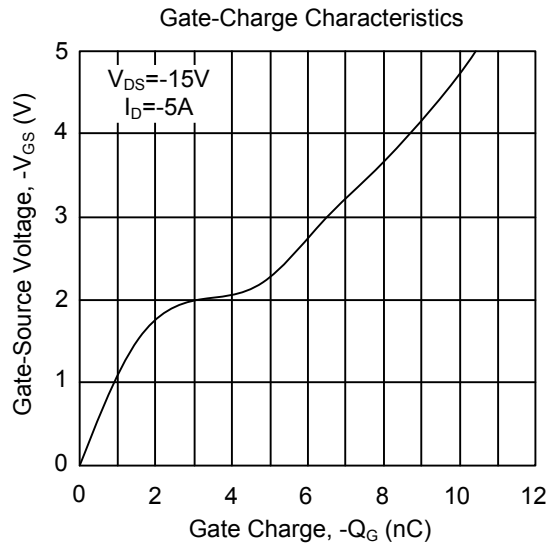
Notes: 1. Pulse width limited by $T_{J(MAX)}$

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

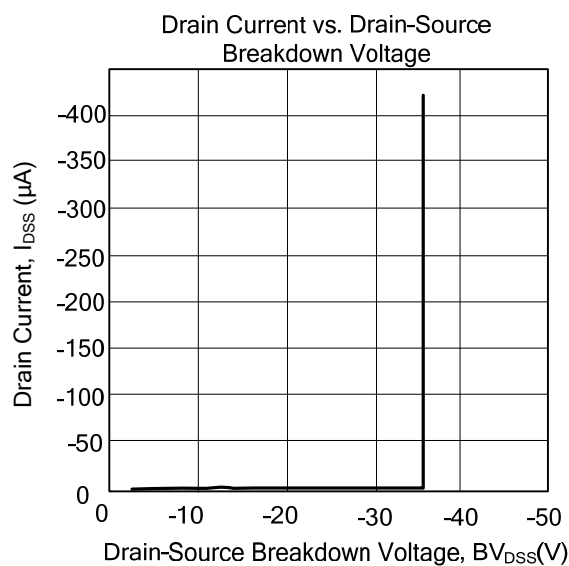
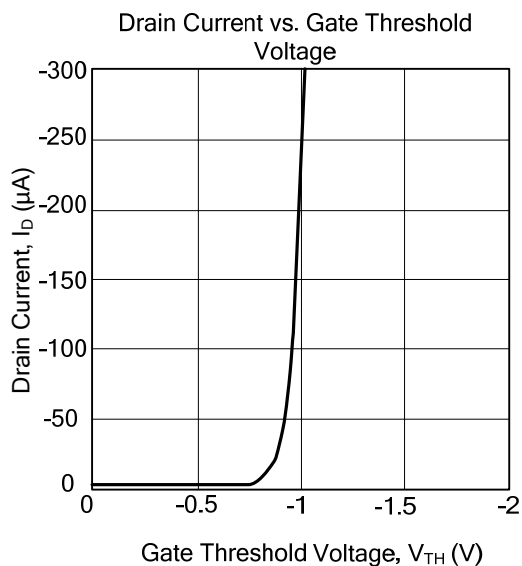
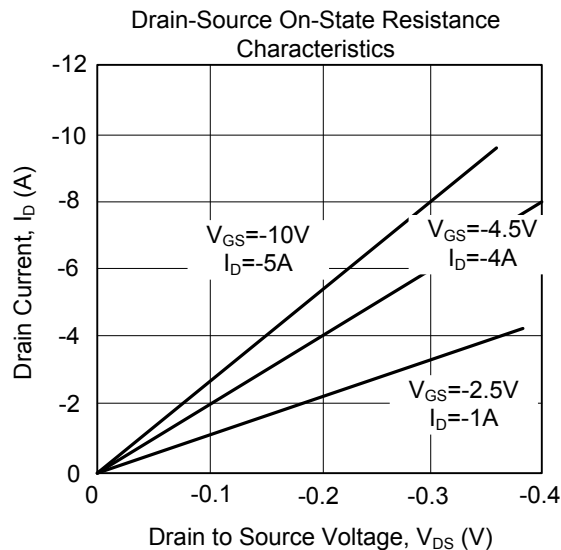
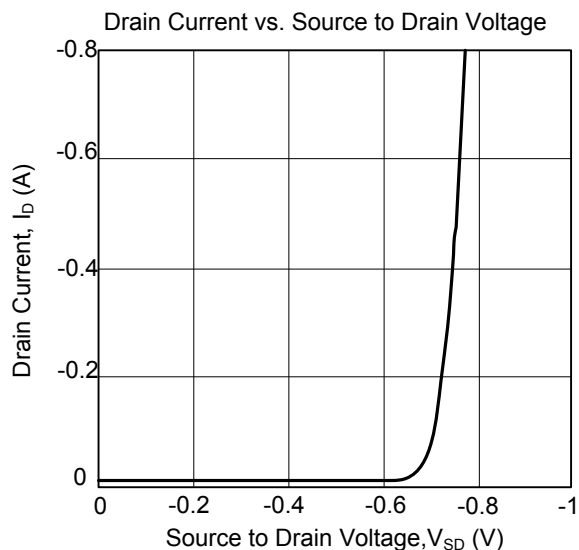
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



TYPICAL CHARACTERISTICS



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