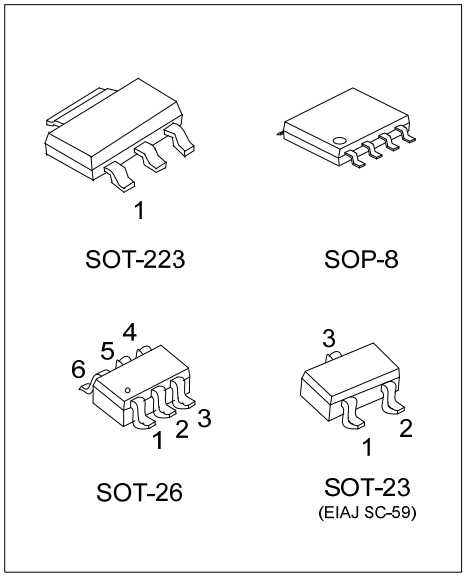
UT6401

Power MOSFET

5.0A, 30V P-CHANNEL ENHANCEMENT MODE

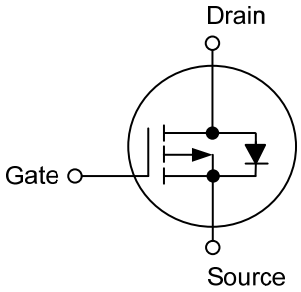


■ DESCRIPTION

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
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT6401L-AA3-R	UT6401G-AA3-R	SOT-223	G	D	S	-	-	-	-	-	Tape Reel
UT6401L-AE3-R	UT6401G-AE3-R	SOT-23	G	S	D	-	-	-	-	-	Tape Reel
UT6401L-AG6-R	UT6401G-AG6-R	SOT-26	D	D	G	S	D	D	-	-	Tape Reel
UT6401L-S08-R	UT6401G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

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

UT6401G-AA3-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AA3: SOT-223, AE3: SOT-23, AG6: SOT-26
S08: SOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

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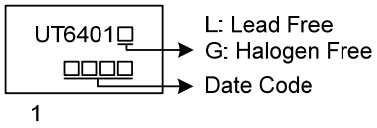
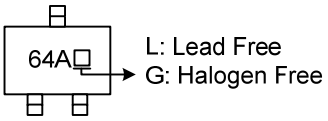
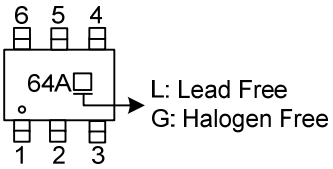
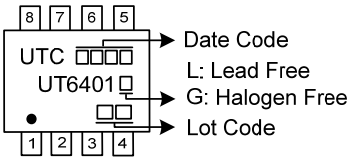
■ MARKING

SOT-223	SOT-23
	
SOT-26	**SOP-8**
	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±12	
Continuous Drain Current (Note 3)		I_D	-5	A
Pulsed Drain Current (Note 2)		I_{DM}	-20	
Power Dissipation	SOT-223	P_D	1.5	W
	SOT-23/SOT-26		1	W
	SOP-8		1.2	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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	RATINGS	UNIT
Junction to Ambient	SOT-223	θ_{JA}	83	°C/W
	SOT-23/SOT-26		125	°C/W
	SOP-8		104	°C/W

Note: The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

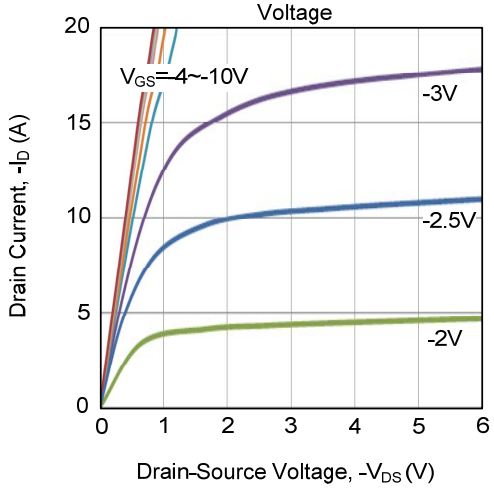
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
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	-1.0	-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=-5.0A		39	46	mΩ
		V_{GS}=-4.5V, I_D=-4.0A		47	57	mΩ
		V_{GS}=-2.5V, I_D=-1.0A		66	97	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=-15V, f=1.0MHz		837		pF
Output Capacitance	C_{OSS}			120		pF
Reverse Transfer Capacitance	C_{RSS}			105		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-5.0A, I_G=1.0mA (Note 1, 2)		12		nC
Gate-Source Charge	Q_{GS}			2		nC
Gate-Drain Charge	Q_{GD}			3.5		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{DS}=-15V, V_{GS}=-10V, I_D=-5.0A, R_G=3.0Ω (Note 1, 2)		4		ns
Turn-ON Rise Time	t_R			17		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			30		ns
Turn-OFF Fall Time	t_F			20		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-5	A
MAXIMUN Body-Diode Pulsed Current	I_{SM}				-20	A
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	I_S=-1.0A, V_{GS}=0V		-0.75	-1	V

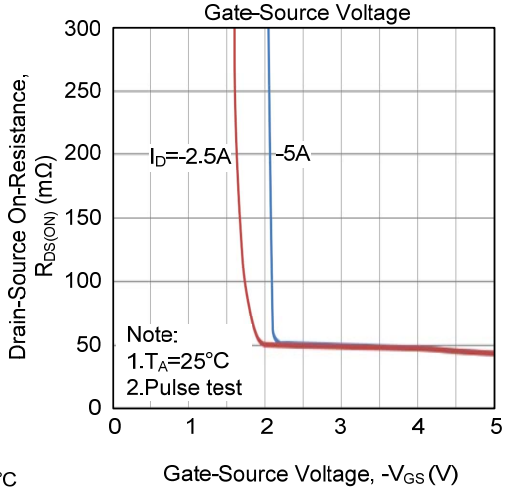
Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse width ≤300μs , duty cycle ≤0.5%.

■ TYPICAL CHARACTERISTICS

Drain Current vs. Drain-Source Voltage

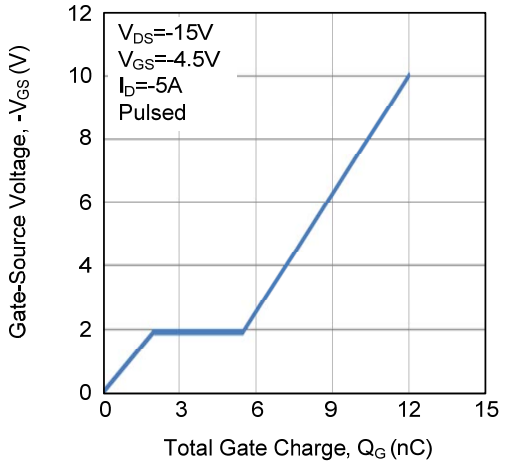


Drain-Source On-Resistance vs. Gate-Source Voltage

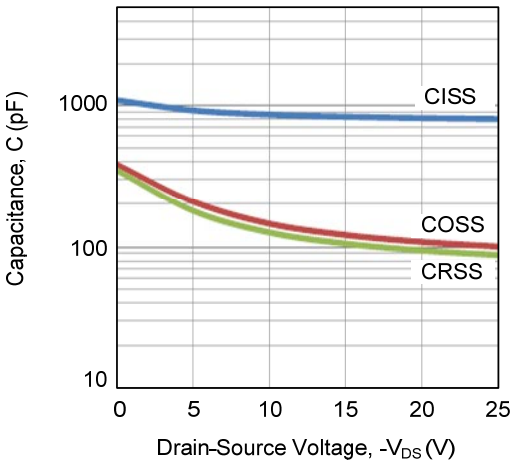


Note:
1.T_A=25°C
2.Pulse test

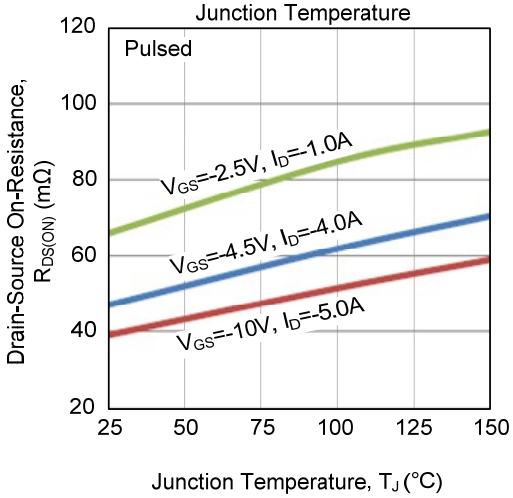
Gate Charge Characteristics



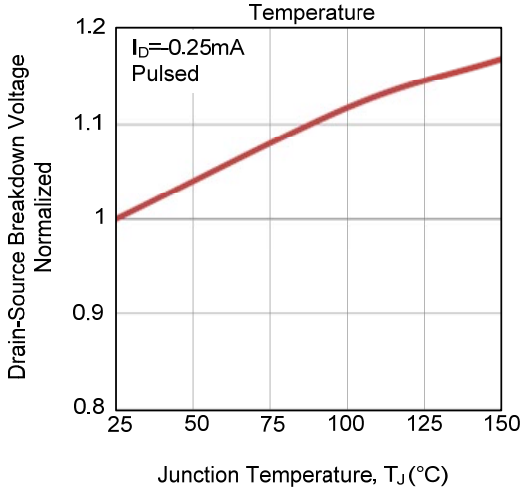
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

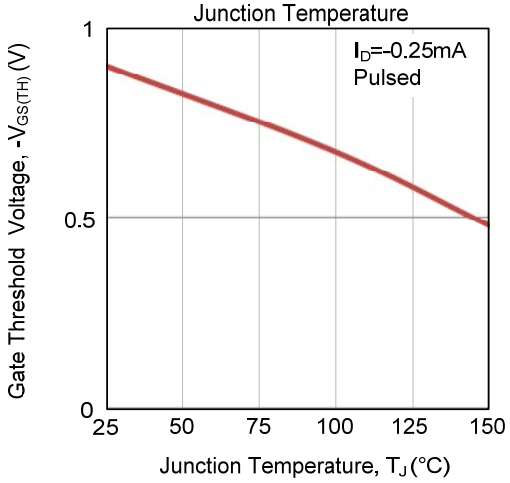


Breakdown Voltage vs. Junction Temperature

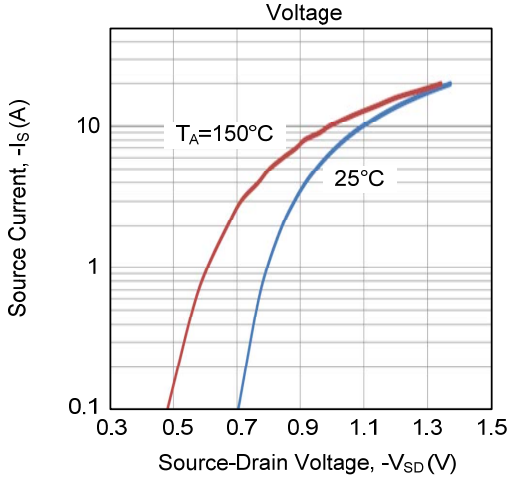


■ TYPICAL CHARACTERISTICS (Cont.)

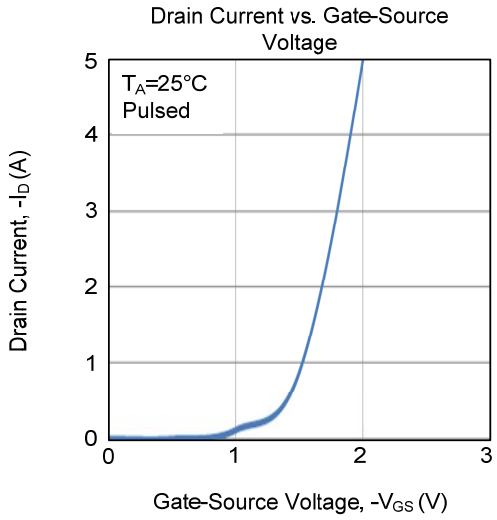
Gate Threshold Voltage vs. Junction Temperature



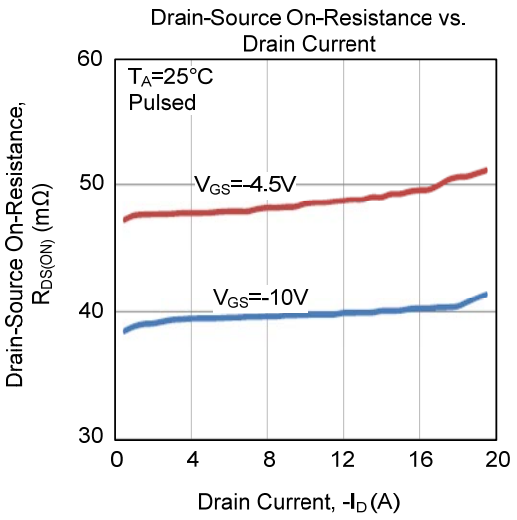
Source Current vs. Source-Drain Voltage



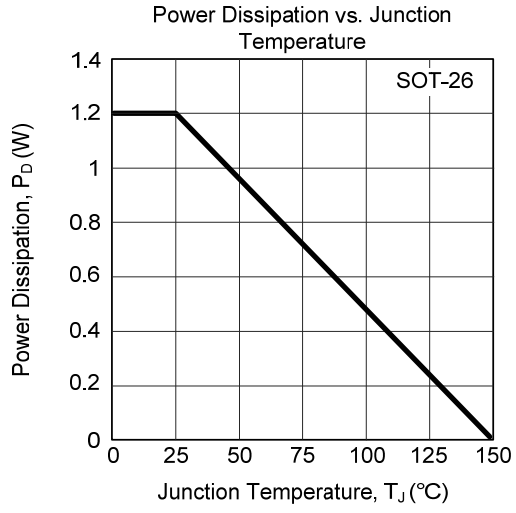
Drain Current vs. Gate-Source Voltage



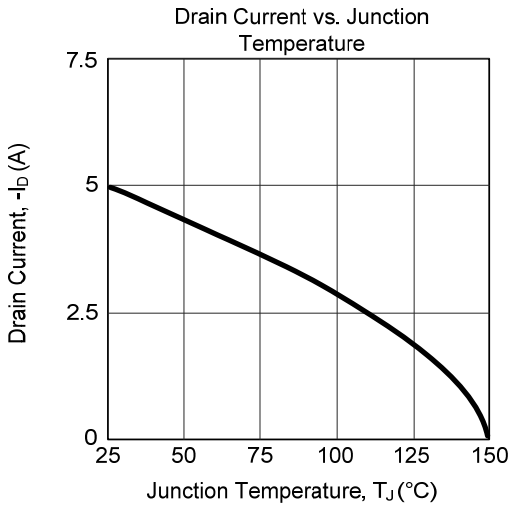
Drain-Source On-Resistance vs. Drain Current



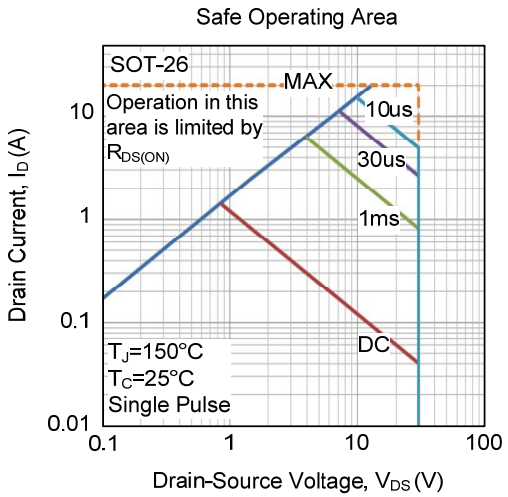
Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)



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