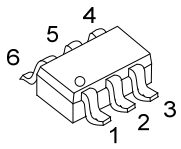
UT6401

Power MOSFET

P-CHANNEL ENHANCEMENT MODE



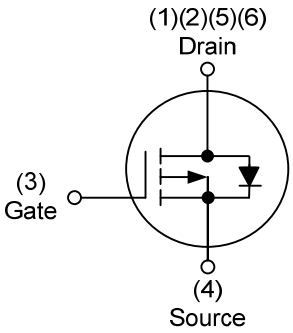
SOT-26

■ 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 Plating	Halogen Free		1	2	3	4	5	6	
UT6401L-AG6-R	UT6401G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

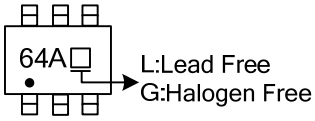
UT6401L-AG6-R

(1)Packing Type — (1) R: Tape Reel

(2)Package Type — (2) AG6: SOT-26

(3)Lead Plating — (3) G: Halogen Free, L: Lead Free Plating

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A = 25℃, 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}	-30	
Power Dissipation	P_D	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	MIN	TYP	MAX	UNIT
Junction to Ambient (Note 3)	θ_{JA}		74	110	℃/W

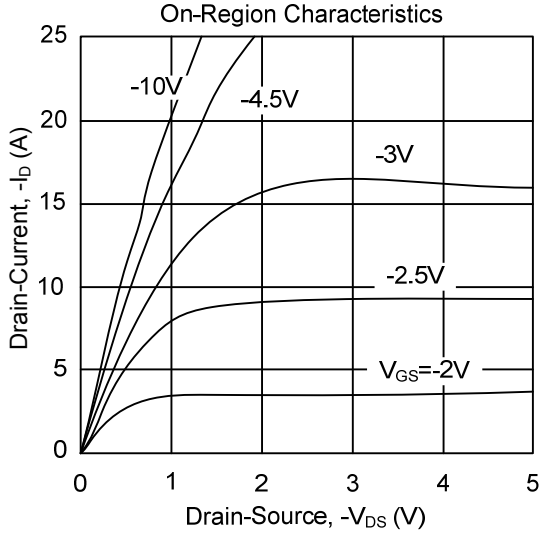
■ ELECTRICAL CHARACTERISTICS (T_J=25℃, unless otherwise specified)

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				-3	A

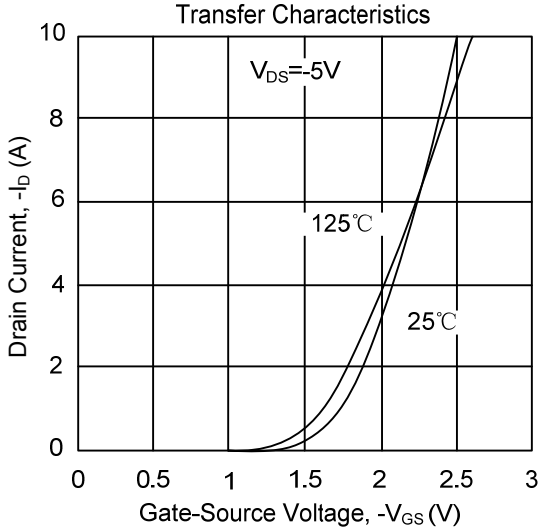
Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤0.5%.
3. Surface mounted on 1 in^2 copper pad of FR4 board.

■ TYPICAL CHARACTERISTICS

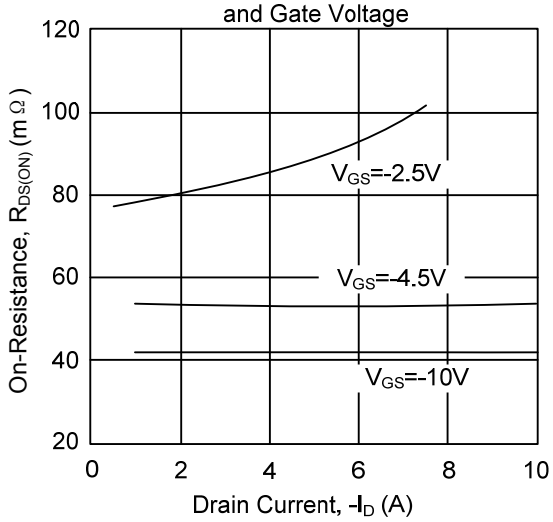
On-Region Characteristics



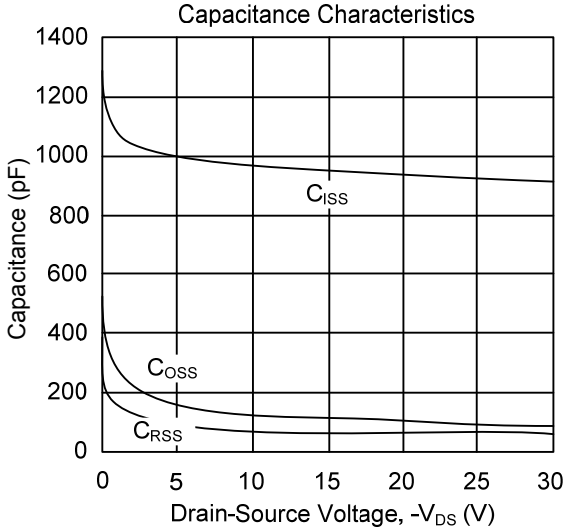
Transfer Characteristics



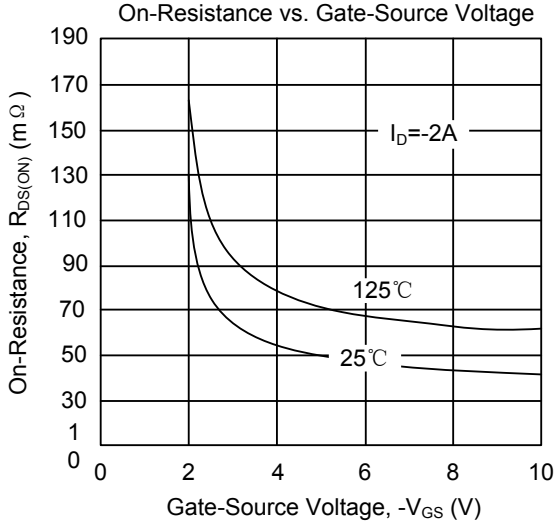
On-Resistance vs. Drain Current and Gate Voltage



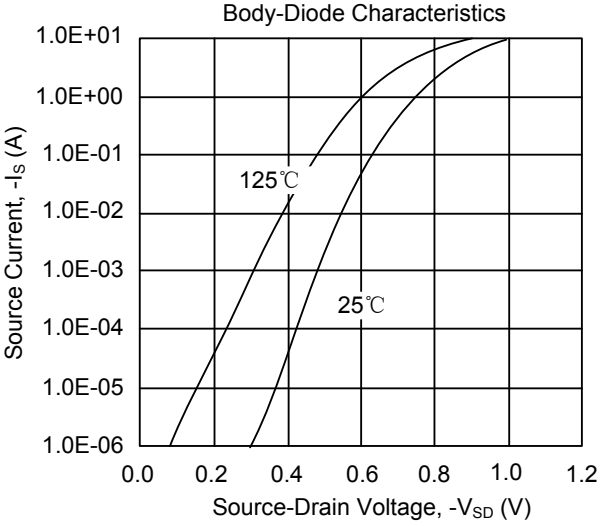
Capacitance Characteristics



On-Resistance vs. Gate-Source Voltage

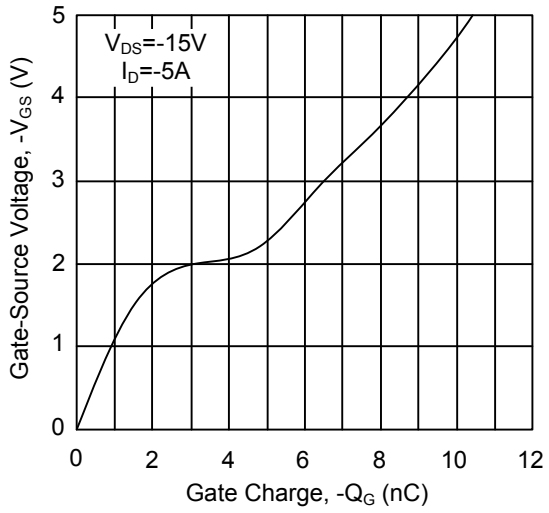


Body-Diode Characteristics

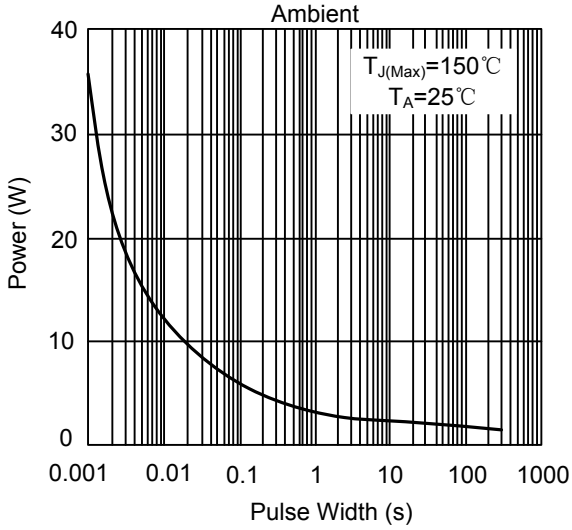


■ TYPICAL CHARACTERISTICS(Cont.)

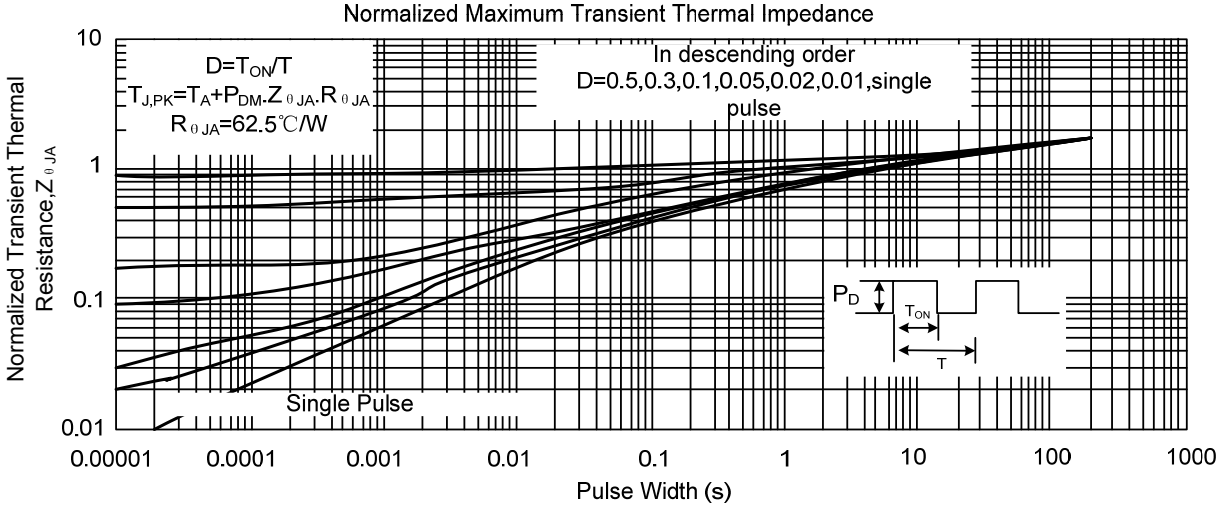
Gate-Charge Characteristics



Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance



Maximum Forward Biased Safe Operating Area