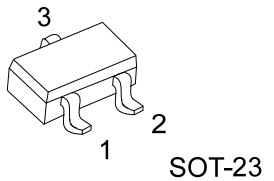
UT3401Z

Power MOSFET

P-CHANNEL ENHANCEMENT MODE



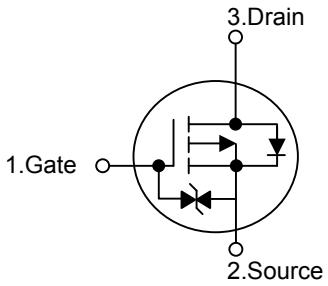
SOT-23
(EIAJ SC-59)

■ DESCRIPTION

The UTC **UT3401Z** is P-channel enhancement mode Power MOSFET, designed with high density cell, with fast switching speed, low on-resistance, excellent thermal and electrical capabilities and operation with low gate voltages.

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

■ SYMBOL



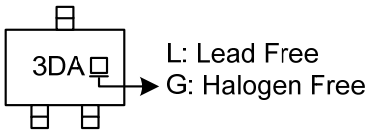
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3401ZL-AE3-R	UT3401ZG-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT3401ZG-AE3-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNITS
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current	Continuous (Note2)	I_D	-4.2	A
	Pulsed (Note3)	I_{DM}	-30	A
Power Dissipation (Note 2)		P_D	1.4	W
ESD(HBM)		ESD	±100	V
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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. Pulse width ≤ 300μs, duty cycle ≤ 2%.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ_{JA}		65	90	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=-250μA, V_{GS}=0V	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.7	-1	-1.3	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.2A		42	50	mΩ
		V_{GS}=-4.5V, I_D=-4A		53	65	mΩ
		V_{GS}=-2.5V, I_D=-1A		80	120	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS} =0V, V_{DS} =-15V, f=1MHz		954		pF
Output Capacitance	C_{OSS}			115		pF
Reverse Transfer Capacitance	C_{RSS}			77		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 2)	Q_G	V_{GS}=-4.5V, V_{DS}=-15V, I_D=-4A		9.4		nC
Gate-Source Charge	Q_{GS}			2		nC
Gate-Drain Charge	Q_{GD}			3		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=3.6Ω, R_G =6Ω		6.3		ns
Turn-ON Rise Time	t_R			3.2		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			38.2		ns
Turn-OFF Fall Time	t_F			12		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-2.2	A
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	V_{DS}=0V, I_S=-1A		-0.75	-1	V
Reverse Recovery Time	t_{rr}	I_F=-4A, dI/dt=100A/μs		20.2		ns
Reverse Recovery Charge	Q_{rr}			11.2		nC

Notes: 1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Pulse width ≤300μs, duty cycle ≤2%
3. Surface mounted on 1 in^2 copper pad of FR4 board

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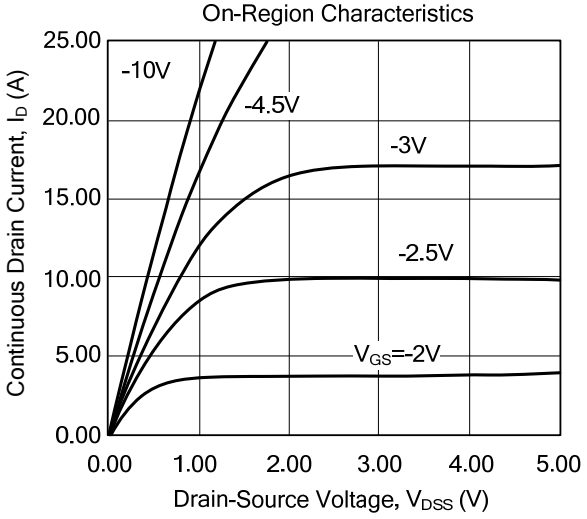
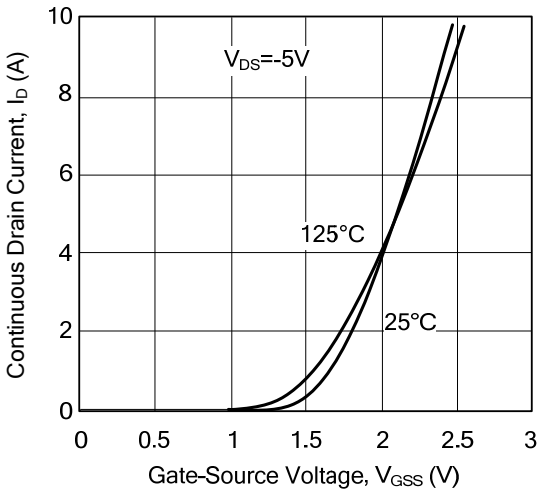
■ TYPICAL CHARACTERISTICS

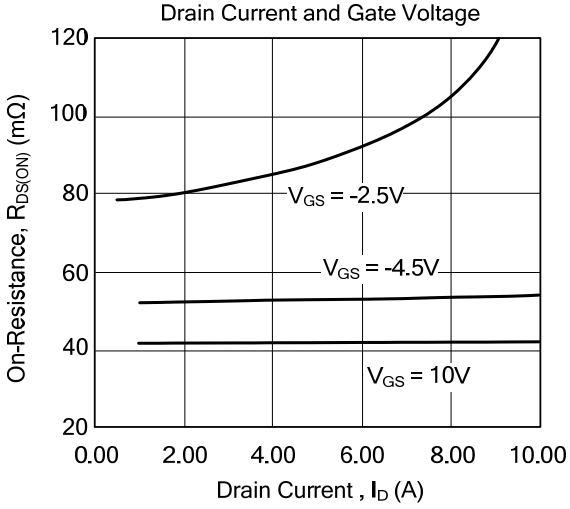
On-Region Characteristics



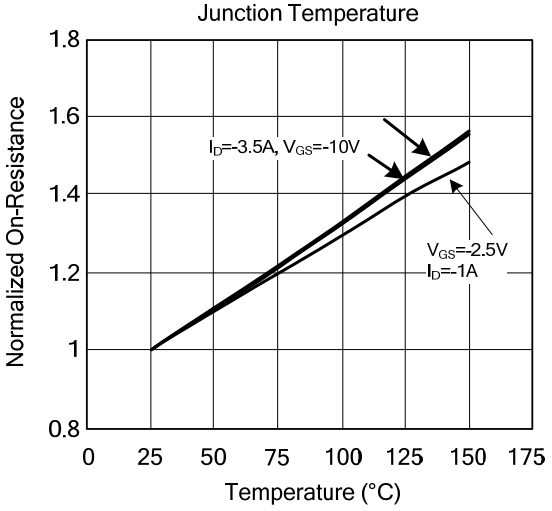
Transfer Characteristics



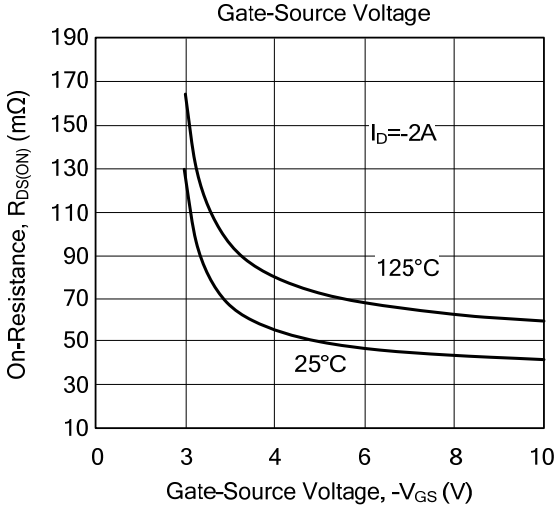
On-Resistance vs.
Drain Current and Gate Voltage



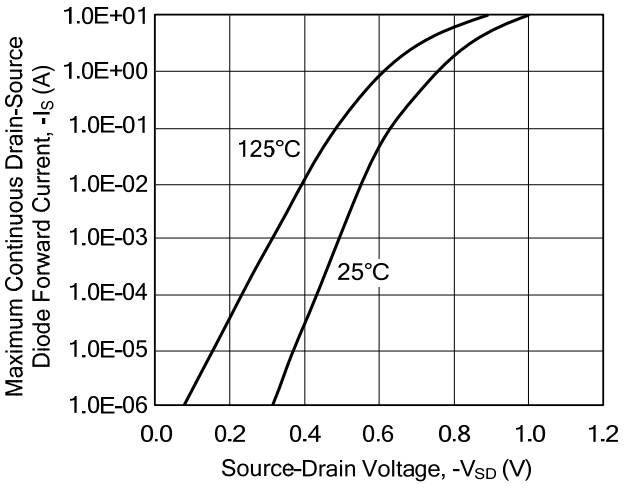
On-Resistance vs.
Junction Temperature



On-Resistance vs.
Gate-Source Voltage



Body-Diode Characteristics



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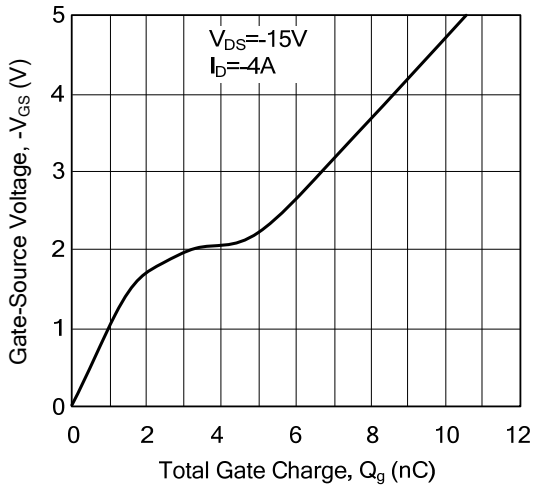
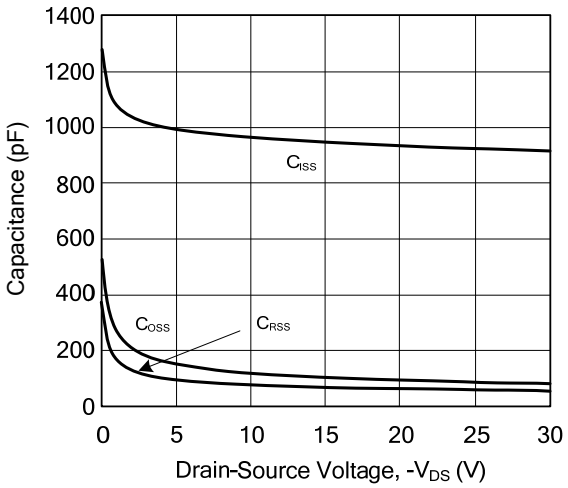
■ TYPICAL CHARACTERISTICS (Cont.)

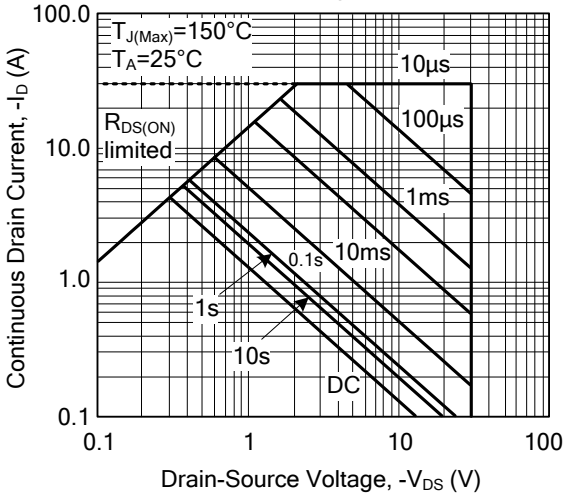
Gate-Charge Characteristics



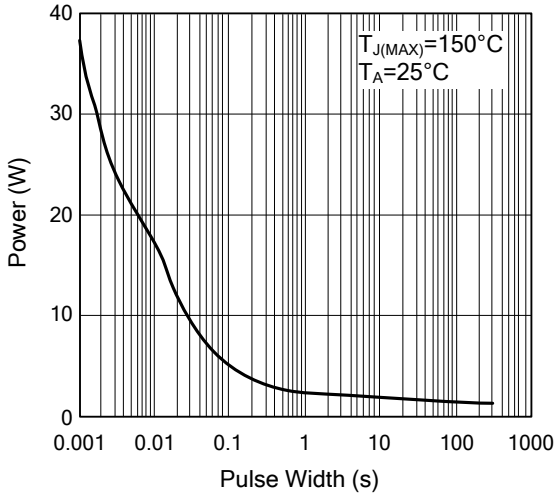
Capacitance Characteristics



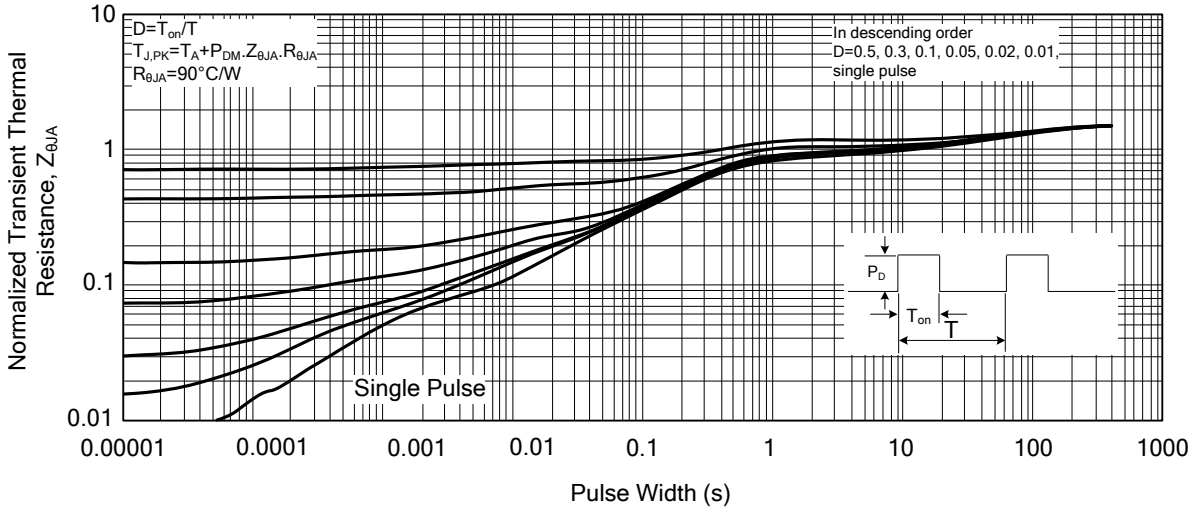
Maximum Forward Biased Safe Operating Area



Single Pulse Power Rating Junction-to-Ambient



Normalized Maximum Transient Thermal Impedance



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