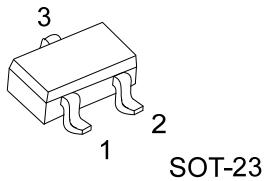
UT3401Z

Power MOSFET

P-CHANNEL ENHANCEMENT MODE



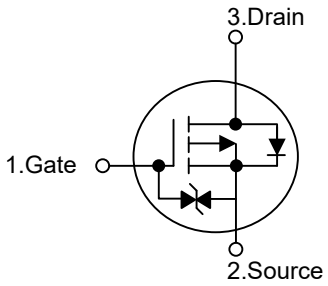
SOT-23
(EIAJ SC-59)

■ 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



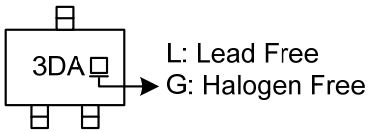
■ ORDERING INFORMATION

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



■ 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	W
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 DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	125	°C/W

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

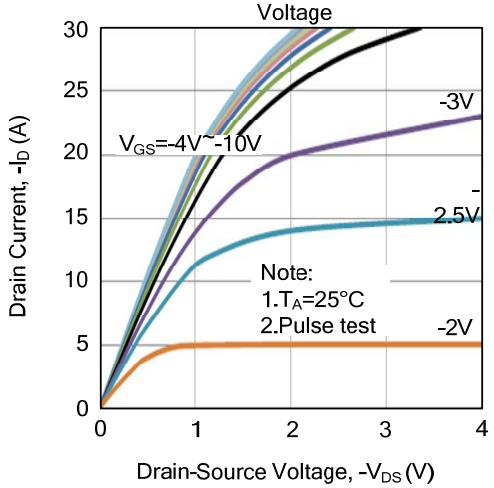
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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	-0.4		-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=-4.0A		53	65	mΩ
		V_{GS}=-2.5V, I_D=-1.0A		80	120	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS} =0V, V_{DS} =-24V, f=1MHz		860		pF
Output Capacitance	C_{OSS}			130		pF
Reverse Transfer Capacitance	C_{RSS}			70		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 2)	Q_G	V_{GS}=-4.5V, V_{DS}=-24V, I_D=-4.0A		13		nC
Gate-Source Charge	Q_{GS}			3.4		nC
Gate-Drain Charge	Q_{GD}			3		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{GS}=-10V, V_{DS}=-15V, I_D=-4.0A, R_G=3Ω		13		ns
Turn-ON Rise Time	t_R			24		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			500		ns
Turn-OFF Fall Time	t_F			370		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=-1.0A		-0.75	-1	V

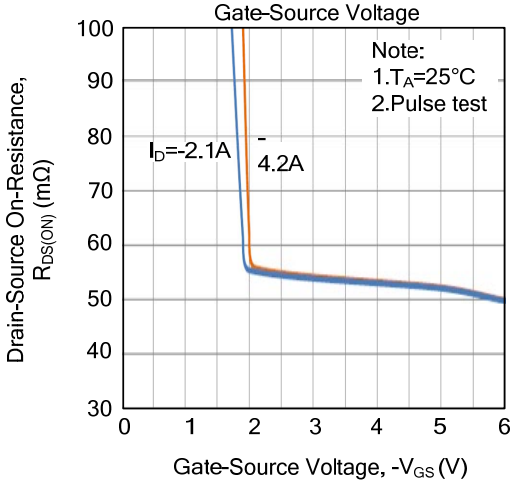
Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse width ≤300μs, duty cycle ≤2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board.

■ TYPICAL CHARACTERISTICS

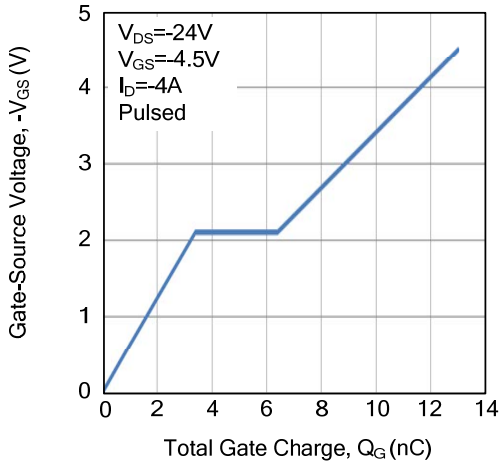
Drain Current vs. Drain-Source Voltage



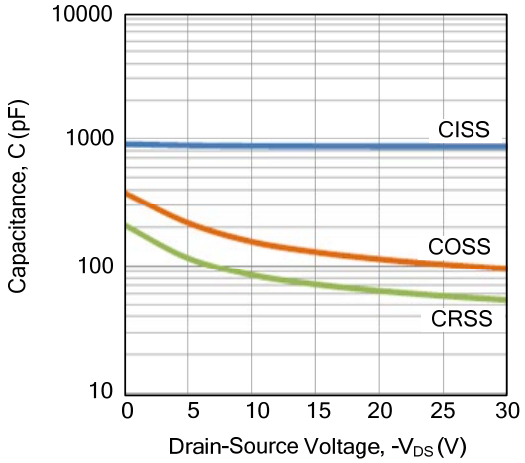
Drain-Source On-Resistance vs. Gate-Source Voltage



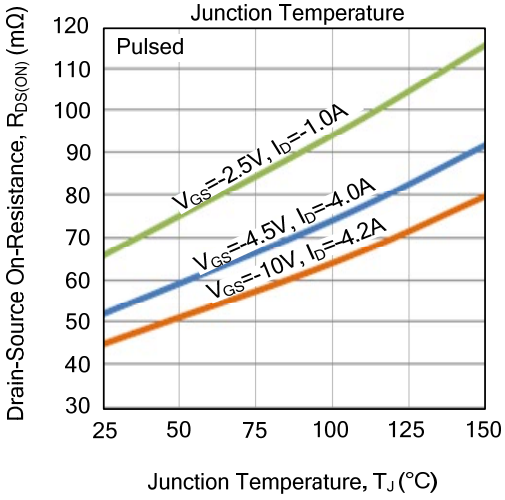
Gate Charge Characteristics



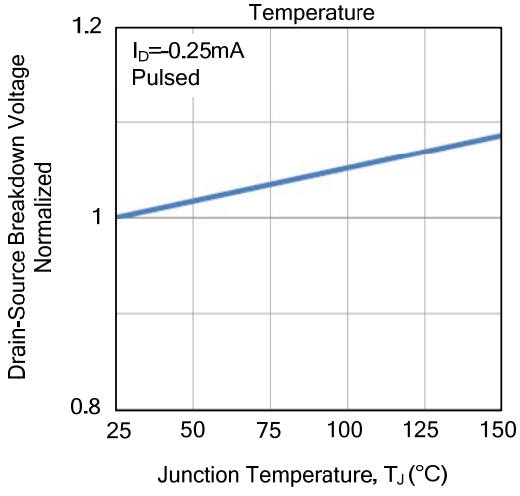
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

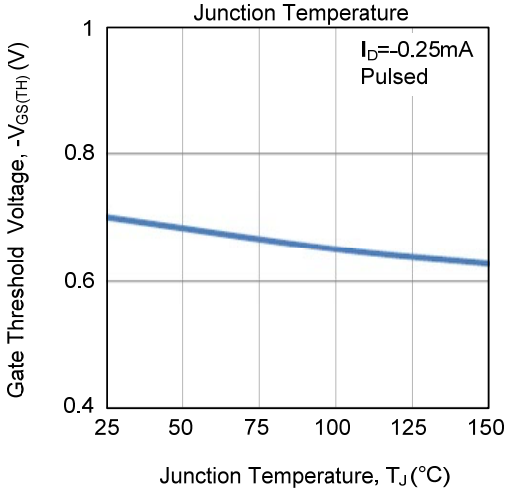


Breakdown Voltage vs. Junction Temperature

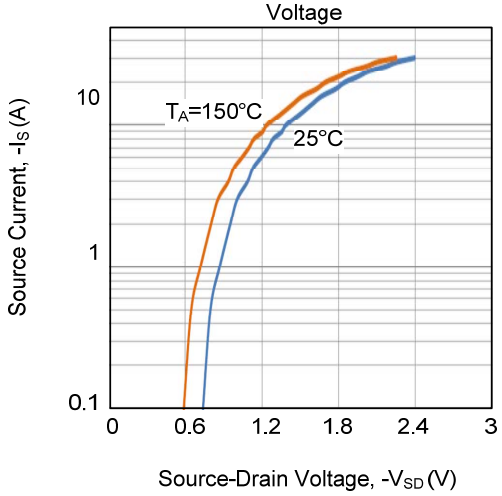


■ TYPICAL CHARACTERISTICS (Cont.)

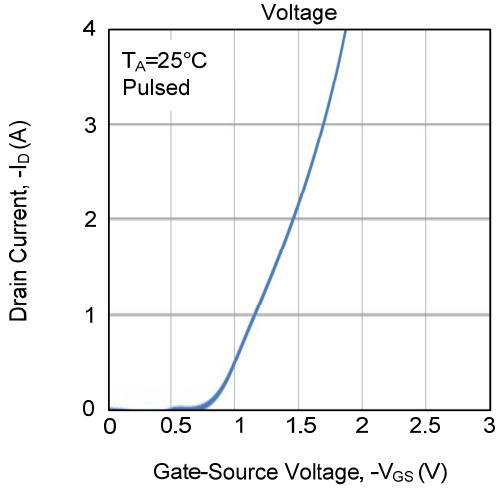
Gate Threshold Voltage vs. Junction Temperature



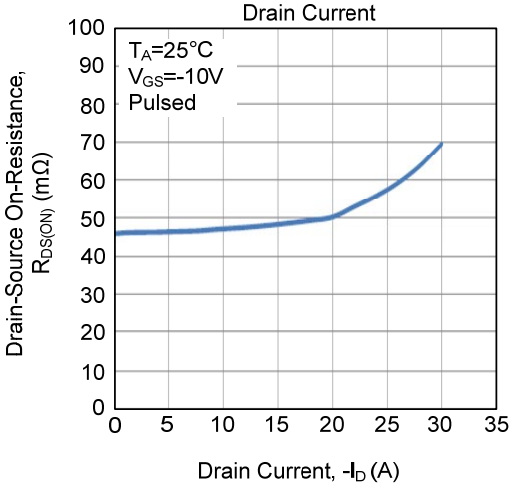
Source Current vs. Source-Drain Voltage



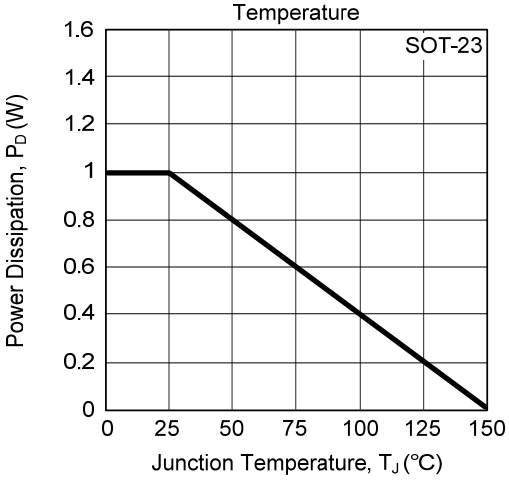
Drain Current vs. Gate-Source Voltage



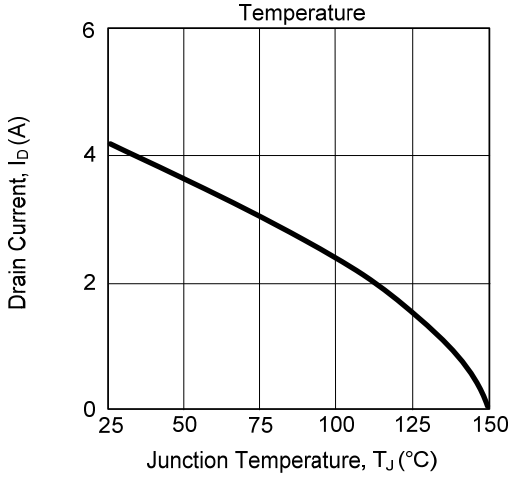
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)