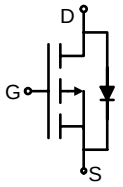
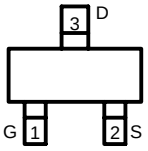
DESCRIPTION

The FTK3401 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.



Schematic diagram



Pin Assignment

SOT-23 top view

GENERAL FEATURES

- V_{DS} = -30V,I_D = -4.2A
  $R_{DS(ON)}$ < 90mΩ @ V_{GS}=-2.5V
  $R_{DS(ON)}$ < 75mΩ @ V_{GS}=-4.5V
  $R_{DS(ON)}$ < 65mΩ @ V_{GS}=-10V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
R1 or A1	FTK 3401	SOT23	Ø180mm	8 mm	3000 units

ABSOLUTE MAXIMUM RATINGS(TA=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_{D(Tc=25℃)}$	-4.2	A
	$I_{D(Tc=70℃)}$	-3.5	A
	I_{DM}	-30	A
Maximum Power Dissipation	P_D	1	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	90	℃/W
Thermal Resistance,Junction-to-Case (Note 2)	$R_{\theta JC}$	30	℃/W

ELECTRICAL CHARACTERISTICS (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.7		-1.3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.2A		42	65	mΩ
		V_{GS}=-4.5V, I_D=-4A		53	75	
		V_{GS}=-2.5V, I_D=-1A		80	90	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-5A	7	11		S

DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz		955		PF
Output Capacitance	C_{oss}			115		PF
Reverse Transfer Capacitance	C_{rss}			75		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V,I_D=-3.2A V_{GS}=-10V,R_{GEN}=6Ω		6.3		nS
Turn-on Rise Time	t_r			3.2		nS
Turn-Off Delay Time	$t_{d(off)}$			38.5		nS
Turn-Off Fall Time	t_f			12		nS
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-4A,V_{GS}=-4.5V		9.4		nC
Gate-Source Charge	Q_{gs}			2		nC
Gate-Drain Charge	Q_{gd}			3		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-1A		-0.75	-1	V
Diode Forward Current (Note 2)	I_S				-2.2	A

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

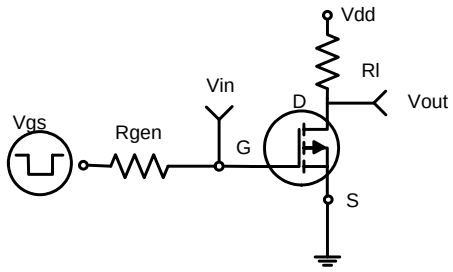


Figure1:Switching Test Circuit

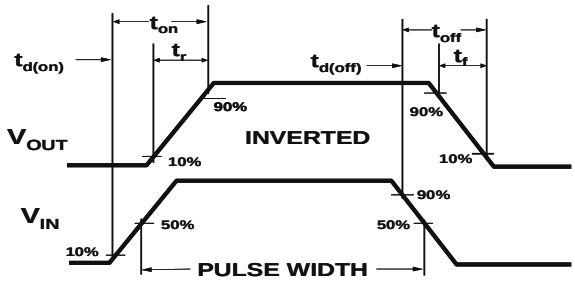
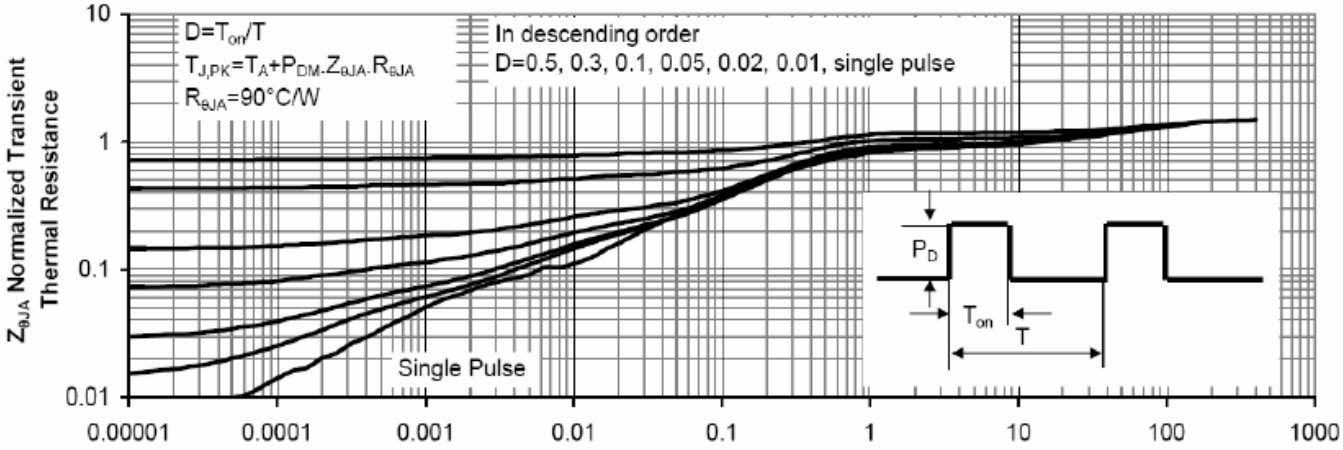


Figure 2:Switching Waveforms

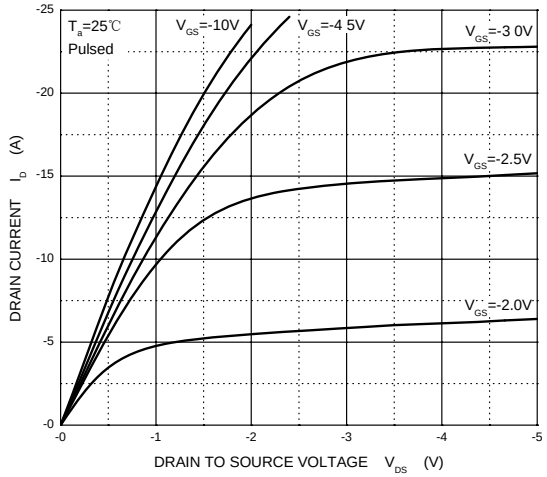


Square Wave Pluse Duration(sec)

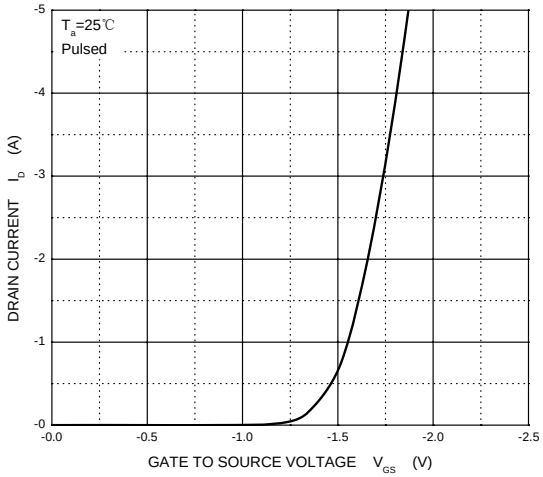
Figure 3: Normalized Maximum Transient Thermal Impedance

Typical Characteristics

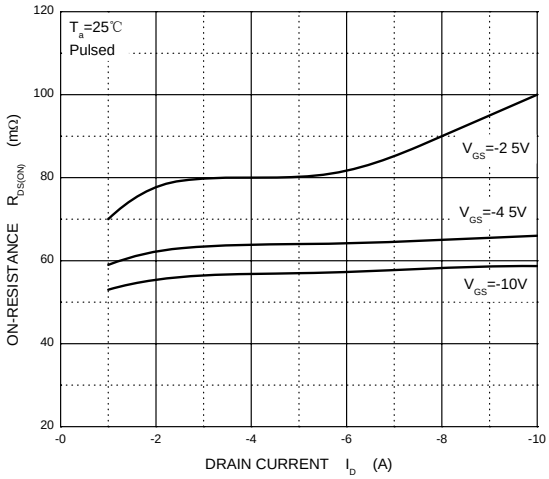
Output Characteristics



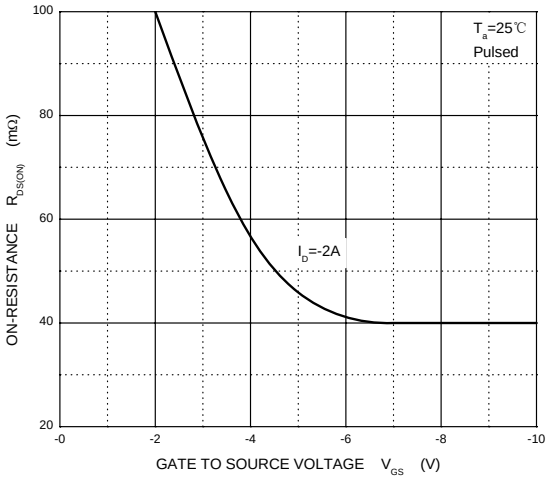
Transfer Characteristics



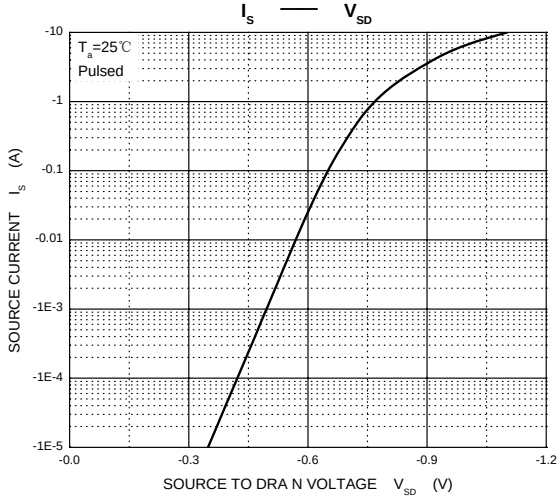
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}

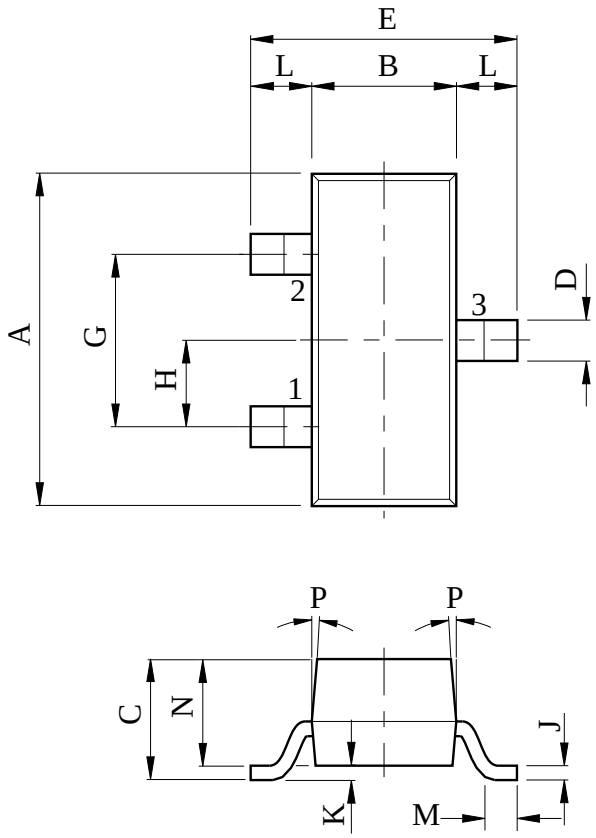


I_S — V_{SD}



SOT23 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT:mm)



DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.45
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°

SOT-23