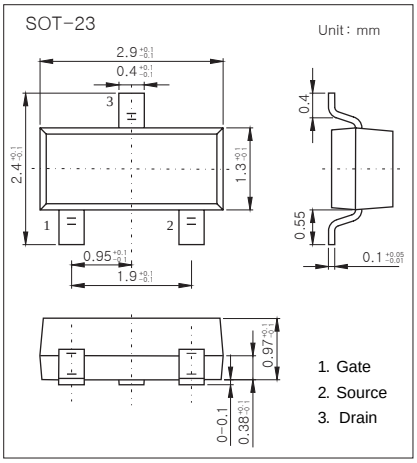
DESCRIPTION

The FTK3401A 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.

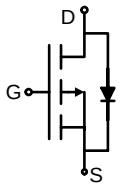


GENERAL FEATURES

- V_{DS} = -30V
- I_D = -4A @ V_{GS}=-10V
- $R_{DS(ON)}$ < 85mΩ @ V_{GS}=-2.5V
- $R_{DS(ON)}$ < 60mΩ @ V_{GS}=-4.5V
- $R_{DS(ON)}$ < 50mΩ @ V_{GS}=-10V

Application

- PWM applications
- Load switch
- Power management



Schematic diagram

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Quantity
A19T	FTK 3401A	SOT-23	3000 units

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_A=25°C	I_D	-4	A
	T_A=70°C		-3.2	
Pulsed Drain Current		I_{DM}	-27	
Power Dissipation	T_A=25°C	P_D	1.4	W
	T_A=70°C		0.9	
Thermal Resistance.Junction- to-Ambient	t ⩽ 10s	R_{thJA}	90	℃/W
	Steady-State		125	
Thermal Resistance.Junction- to-Lead		R_{thJL}	80	
Junction Temperature		T_J	150	℃
Junction Storage Temperature Range		T_{stg}	-55 to 150	

Electrical Characteristics(TA=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	uA
		V_{DS}=-30V, V_{GS}=0V, T_J=55℃			-5	
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.5		-1.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4A			50	mΩ
		V_{GS}=-10V, I_D=-4A T_J=125℃			75	
		V_{GS}=-4.5V, I_D=-3.5A			60	
		V_{GS}=-2.5V, I_D=-2.5A			85	
On state drain current	$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-27			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-4A		17		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		645		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			55		
Gate resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	4		12	Ω
Total Gate Charge (10V)	Q_g	V_{GS}=-10V, V_{DS}=-15V, I_D=-4A		14		nC
Total Gate Charge (4.5V)				7		
Gate Source Charge	Q_{gs}			1.5		
Gate Drain Charge	Q_{gd}			2.5		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=3.75Ω, R_{GEN}=3Ω		6.5		ns
Turn-On Rise Time	t_r			3.5		
Turn-Off DelayTime	$t_{d(off)}$			41		
Turn-Off Fall Time	t_f			9		
Body Diode Reverse Recovery Time	t_{rr}	I_F=-4A, dI/dt=100A/μs		11		
Body Diode Reverse Recovery Charge	Q_{rr}			3.5		nC
Maximum Body-Diode Continuous Current	I_S				-2	A
Diode Forward Voltage	V_{SD}	I_S=-1A,V_{GS}=0V			-1	V

* The static characteristics in Figures 1 to 6 are obtained using <300us pulses, duty cycle 0.5% max.

Typical Characteristics

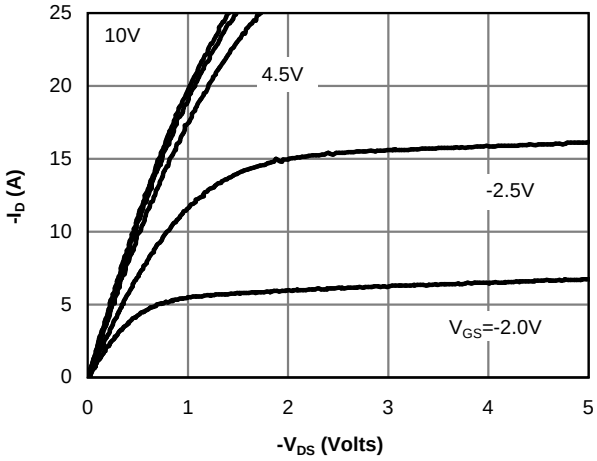


Fig 1: On-Region Characteristics

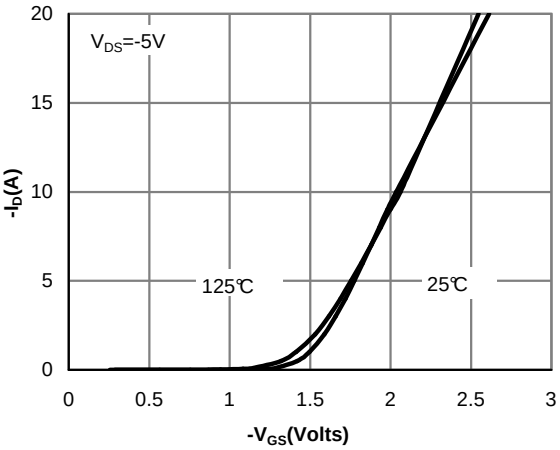


Figure 2: Transfer Characteristics

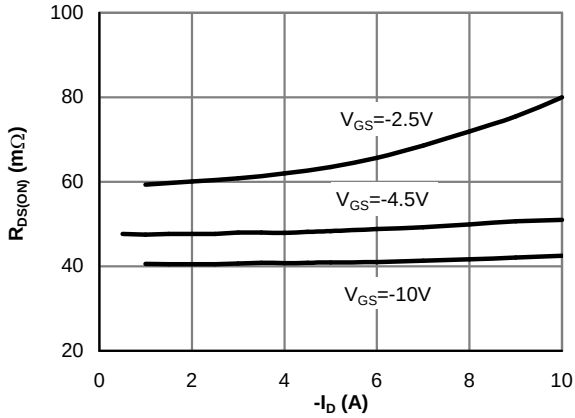


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

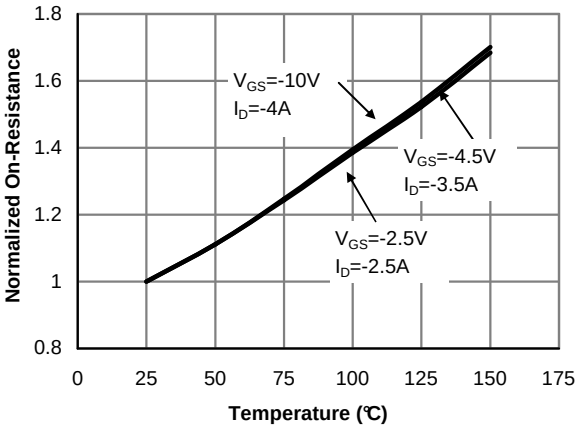


Figure 4: On-Resistance vs. Junction Temperature

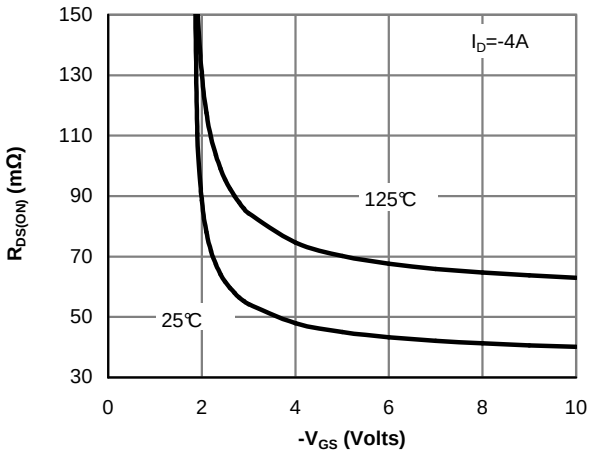


Figure 5: On-Resistance vs. Gate-Source Voltage

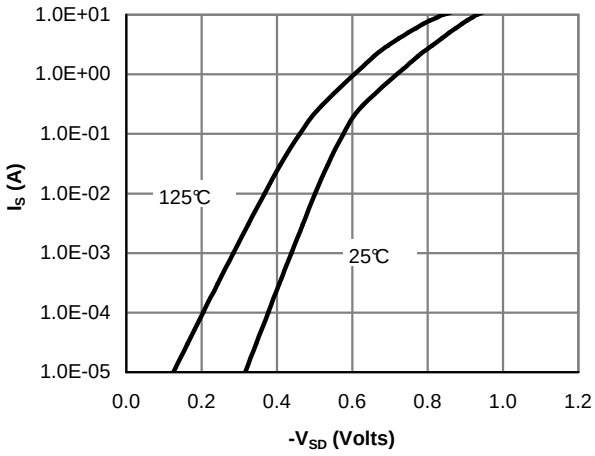


Figure 6: Body-Diode Characteristics

Typical Characterisitics(Con.)

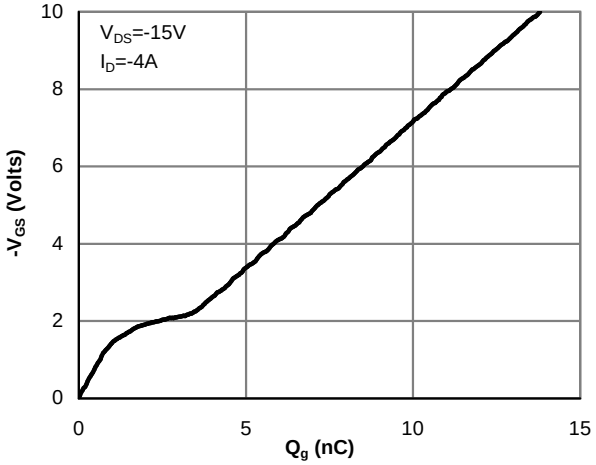


Figure 7: Gate-Charge Characteristics

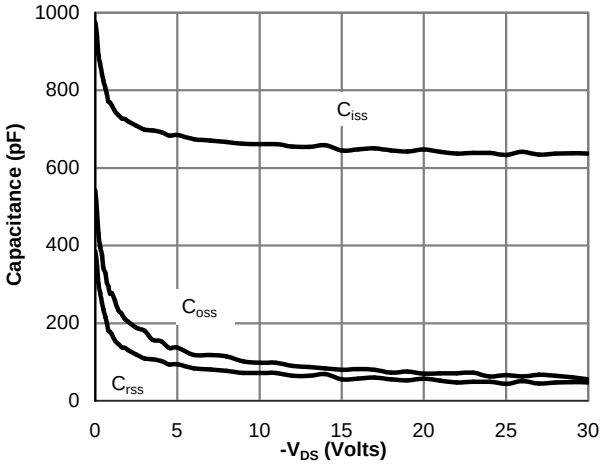


Figure 8: Capacitance Characteristics

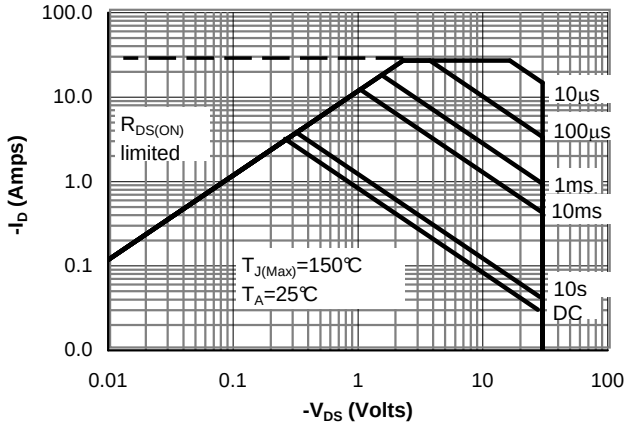


Figure 9: Maximum Forward Biased Safe Operating Area

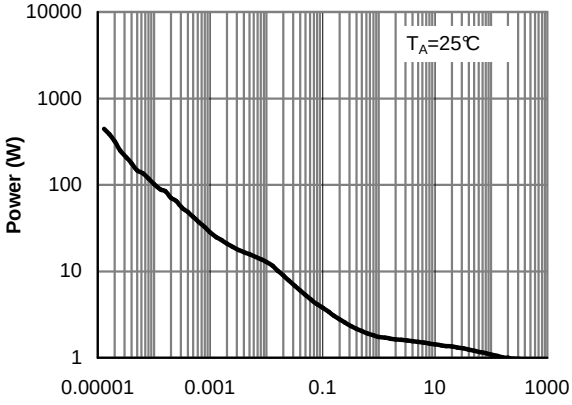


Figure 10: Single Pulse Power Rating Junction-to-Ambient

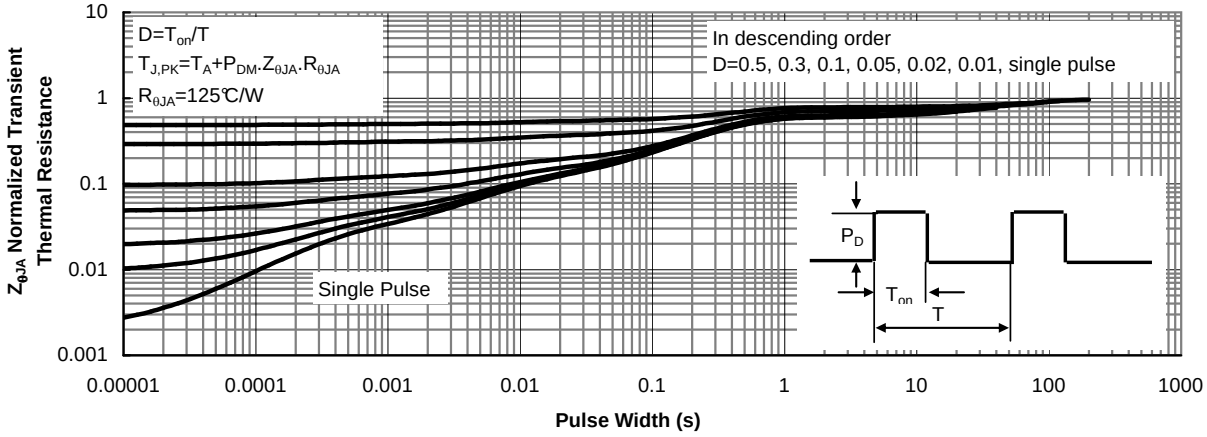


Figure 11: Normalized Maximum Transient Thermal Impedance