

DESCRIPTION

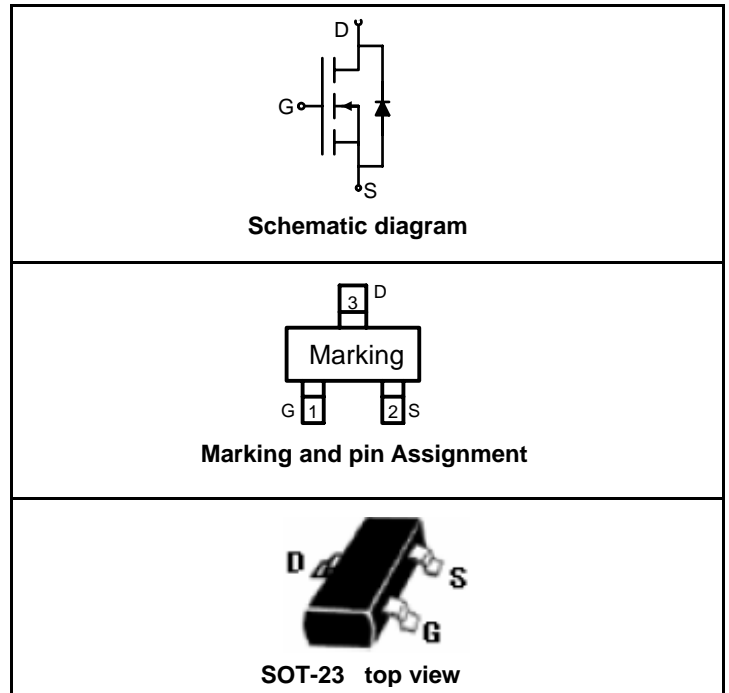
The FTK2304 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

- $V_{DS} = 30V, I_D = 3.3A$
 $R_{DS(ON)} < 75m\Omega @ V_{GS} = 4.5V$
 $R_{DS(ON)} < 60m\Omega @ V_{GS} = 10V$
- 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
2304 or S4	FTK2304	SOT-23	Ø180mm	8 mm	3000 units

ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	3.3	A
	I_{DM}	15	A
Maximum Power Dissipation	P_D	0.83	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	150	°C/W
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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			1	µA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	1.2		2.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}= 10V, I_D= 3.2A$			60	mΩ
		$V_{GS}= 4.5V, I_D=2.8A$			75	
Forward Transconductance	g_{FS}	$V_{DS}=4.55V, I_D=2.5A$	3			S

DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{iss}	$V_{DS}= 15V, V_{GS}=0V,$ $F=1.0MHz$		235		PF
Output Capacitance	C_{oss}			45		PF
Reverse Transfer Capacitance	C_{rss}			17		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}= 15V, I_D= 2.7A$ $V_{GS}= 4.5V, R_{GEN}=5.6\Omega$		12		nS
Turn-on Rise Time	t_r			50		nS
Turn-Off Delay Time	$t_{d(off)}$			12		nS
Turn-Off Fall Time	t_f			22		nS
Total Gate Charge	Q_g	$V_{DS}= 15V, I_D=3.4A$ $, V_{GS}= 4.5V$		2.1		nC
Gate-Source Charge	Q_{gs}			0.85		nC
Gate-Drain Charge	Q_{gd}			0.65		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S= -2.7A$			-1.2	V
Diode Forward Current (Note 2)	I_S				1.4	A

NOTES:

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

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

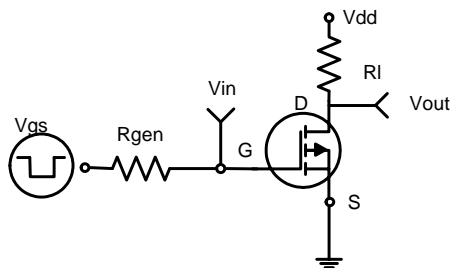


Figure1:Switching Test Circuit

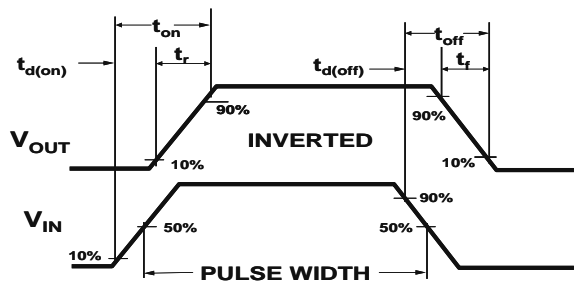
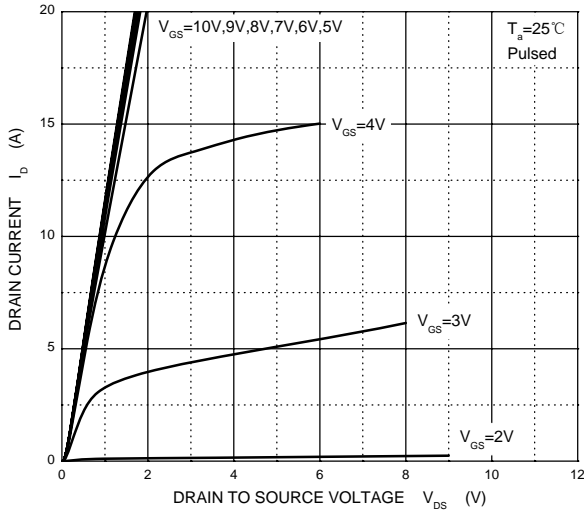


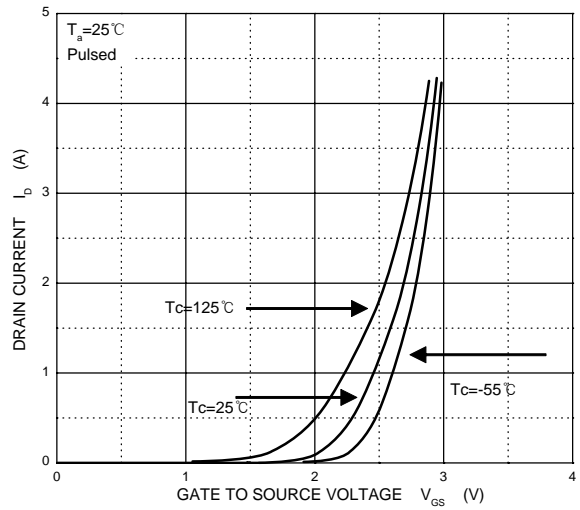
Figure 2:Switching Waveforms

Typical Characteristics

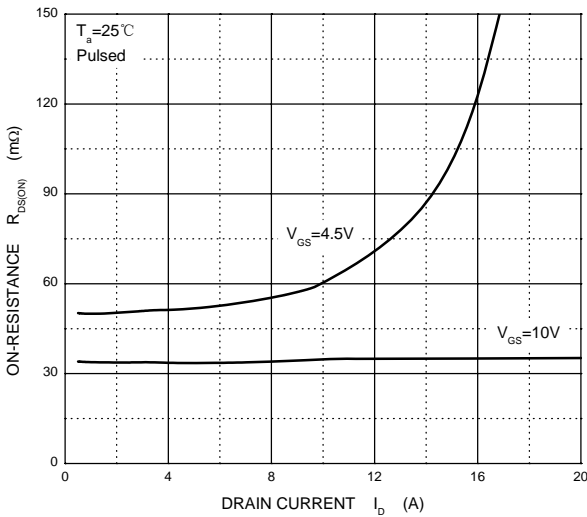
Output Characteristics



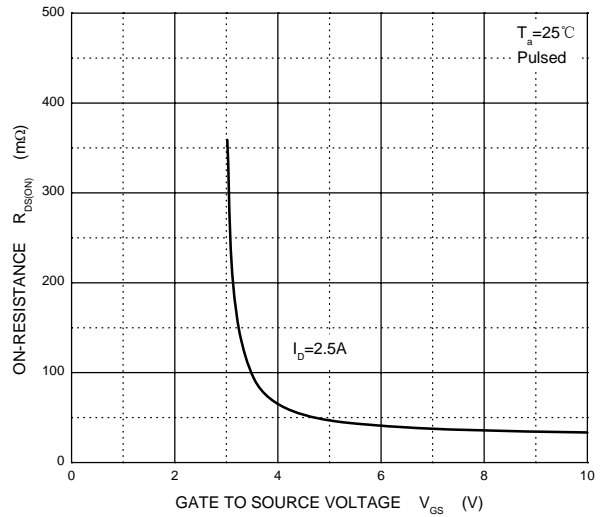
Transfer Characteristics



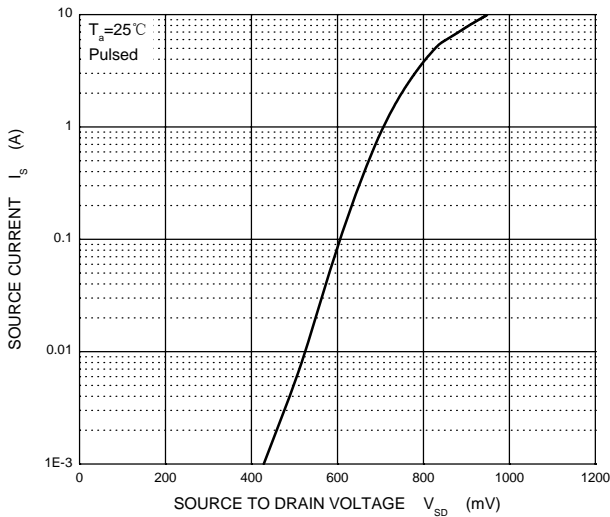
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



SOT-23 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT:mm)

