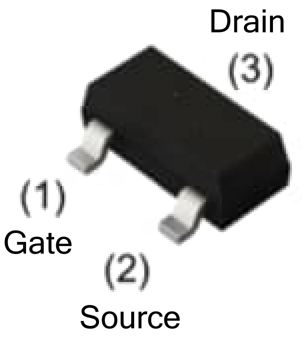
P-Channel Enhancement Mode MOSFET

Description

The FTK2319 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.



SOT−23

General Features

V_{DS} =-40V,I_D =-5A

$R_{DS(ON)}$ <85mΩ @ V_{GS}=-10V

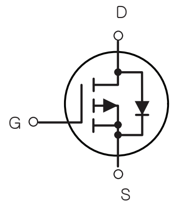
$R_{DS(ON)}$ <120mΩ @ V_{GS}=-4.5V

Application

Power switching application

Hard switched and high frequency circuits

DC-DC converter



P-Channel MOSFET

Package Marking and Ordering Information

Product ID	Package	Marking	Qty(PCS)
FTK2319	SOT-23	2319	3000

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	-5	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	-2.3	A
Pulsed Drain Current	I_{DM}	-18	A
Maximum Power Dissipation	P_D	1.4	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance ,Junction-to-Ambient(Note 2)	$R_{\theta JA}$	89	℃/W

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Electrical Characteristics (T_A=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	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	-1.9	-3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3A	-	73	85	mΩ
		V_{GS}=-4.5V, I_D=-2A	-	98	120	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-3A	-	5	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-20V,V_{GS}=0V, F=1.0MHz	-	600	-	PF
Output Capacitance	C_{oss}		-	90	-	PF
Reverse Transfer Capacitance	C_{rss}		-	70	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-20V, ,R_L=2Ω V_{GS}=-10V,R_{GEN}=3Ω	-	9	-	nS
Turn-on Rise Time	t_r		-	8	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	28	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=-20V,I_D=-3A, V_{GS}=-10V	-	14	-	nC
Gate-Source Charge	Q_{gs}		-	2.9	-	nC
Gate-Drain Charge	Q_{gd}		-	3.8	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-3.3A	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-3.3	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

Typical Electrical and Thermal Characteristics

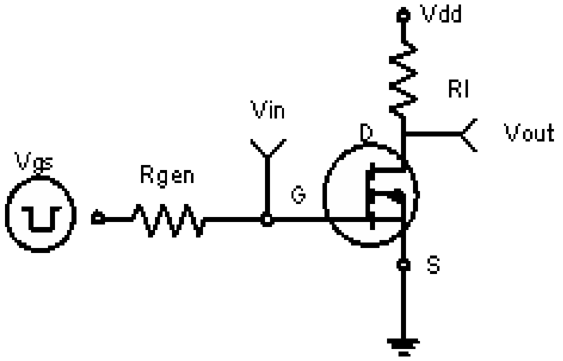

Figure 1:Switching Test Circuit

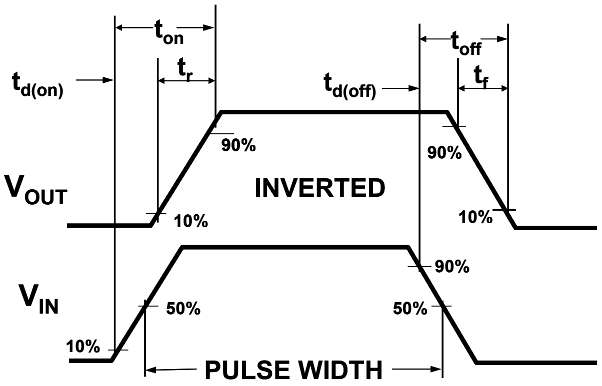

Figure 2:Switching Waveforms

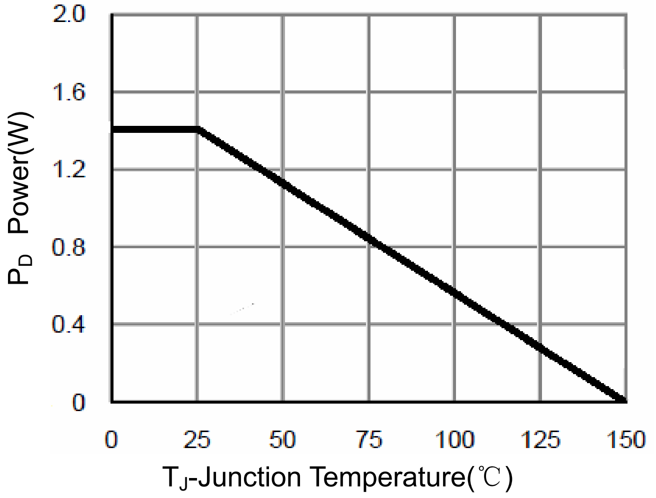

Figure 3 Power Dissipation

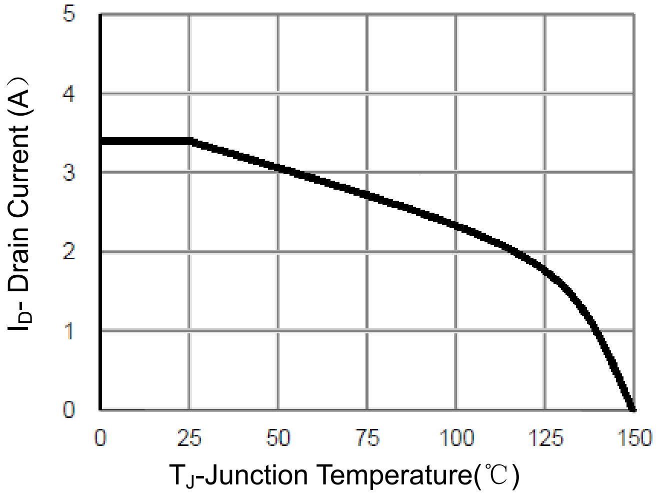

Figure 4 Drain Current

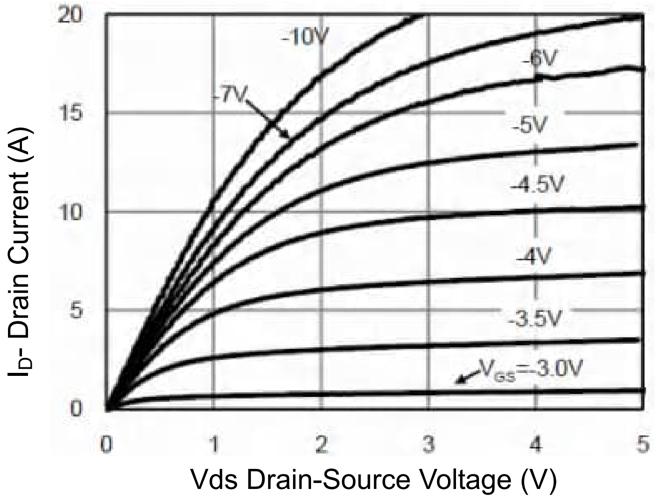

Figure 5 Output Characteristics

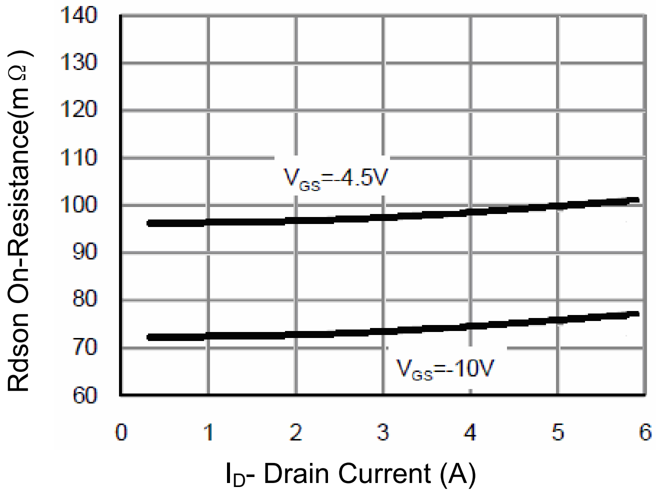

Figure 6 Drain-Source On-Resistance

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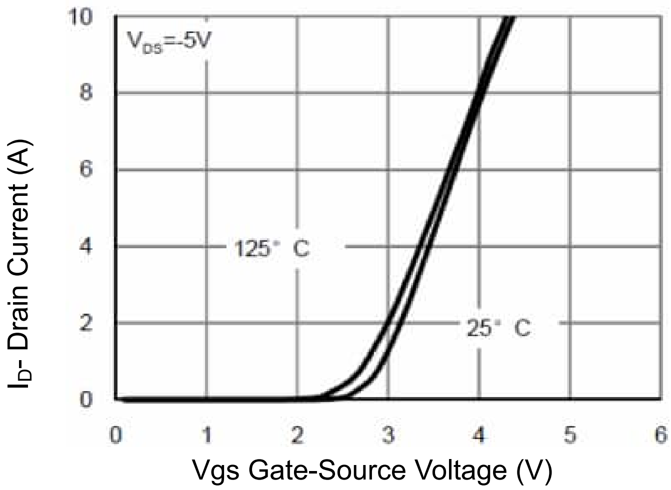

Figure 7 Transfer Characteristics

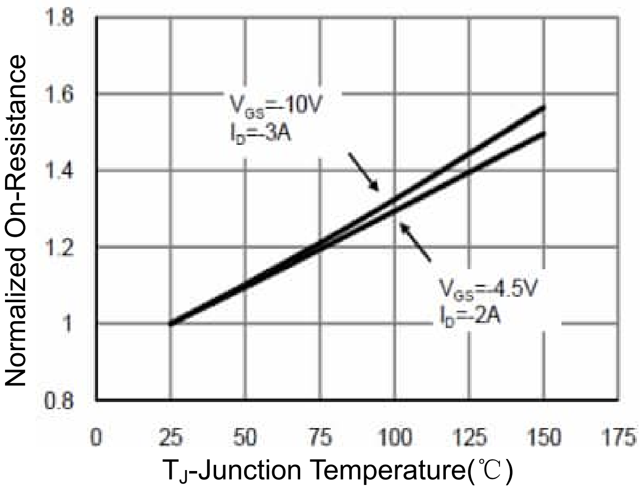

Figure 8 Drain-Source On-Resistance

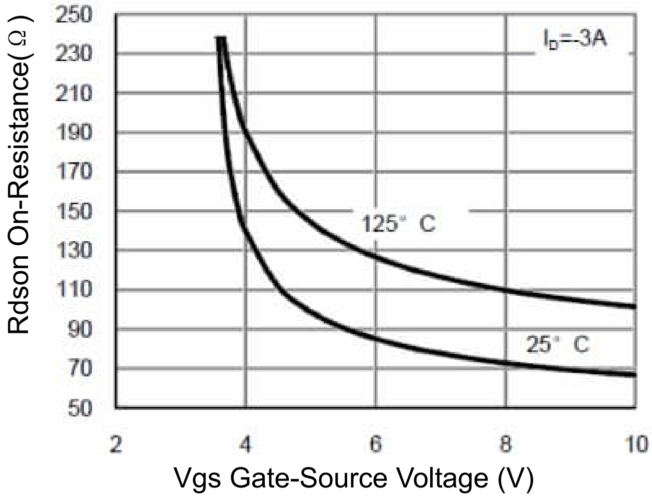

Figure 9 Rdson vs Vgs

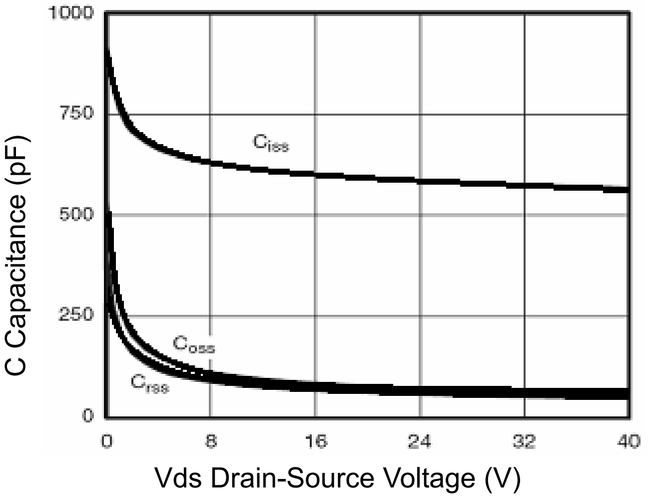

Figure 10 Capacitance vs Vds

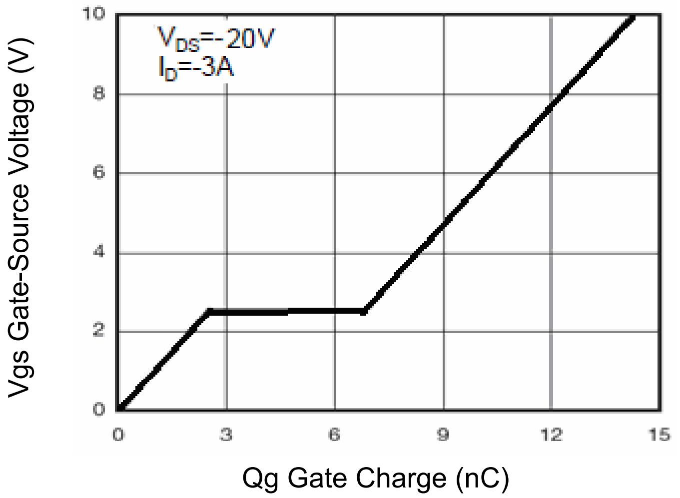

Figure 11 Gate Charge

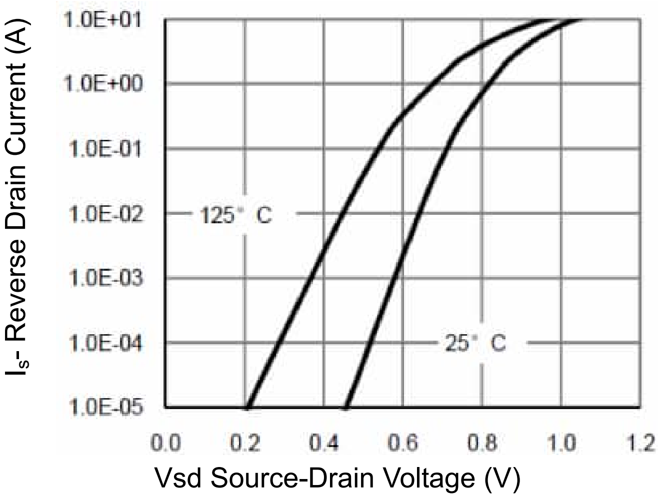

Figure 12 Source- Drain Diode Forward

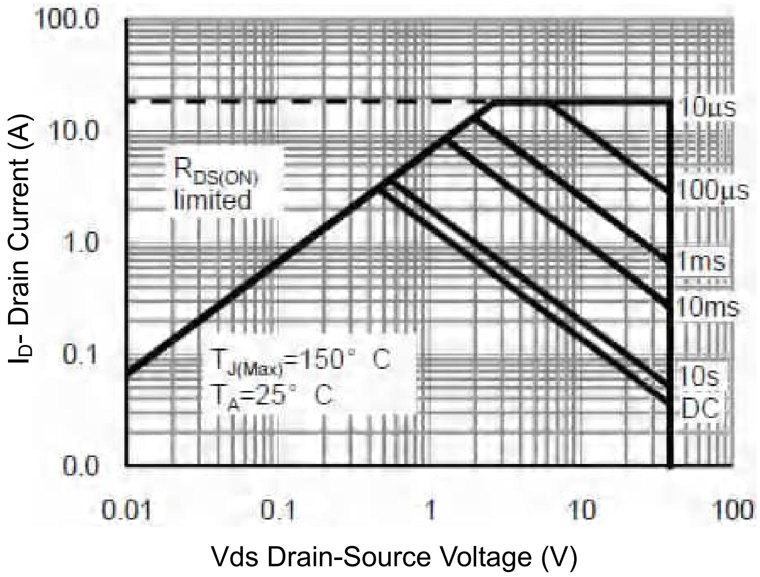

Figure 13 Safe Operation Area

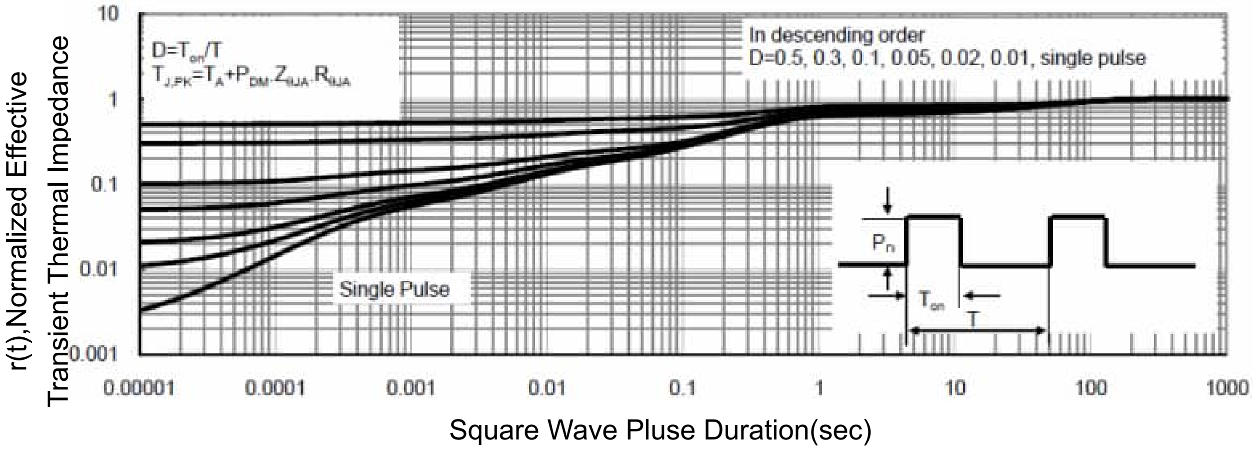

Figure 14 Normalized Maximum Transient Thermal Impedance

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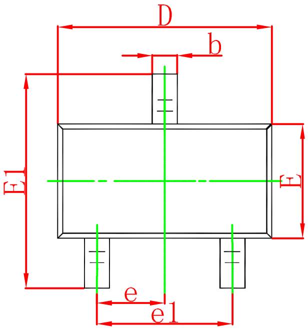
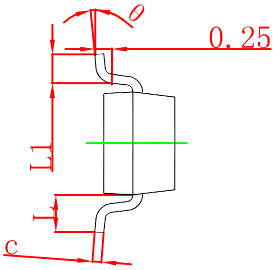
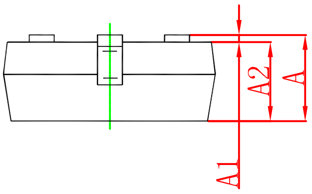
SOT-23 Package Outline Dimensions

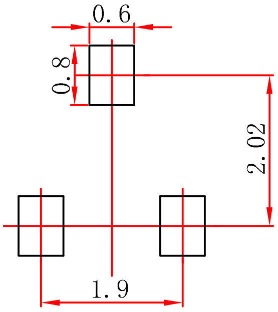






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	° 8

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.