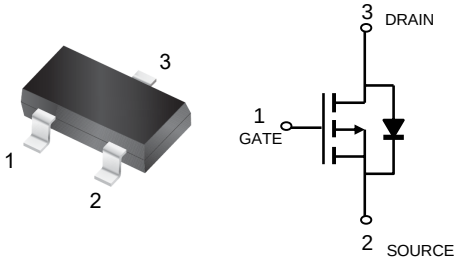
P-Channel MOSFET in SOT-23

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage



Mechanical Data

- **Case:** SOT-23 (plastic package).
  Lead free; RoHS compliant
- **Molding Compound Flammability Rating:**
  UL 94 V-0
- **Terminals:** High temperature soldering guaranteed:
  260 °C/10 sec. at terminals

Applications

- Load/Power Switching
- Interfacing Switching
- DC-DC Converters
- Power management functions
- Analog Switch

Absolute Maximum Ratings

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current	T_C = 25℃	-4.1	A
		T_C = 100℃	-3.2	
I_{DM}	Pulsed Drain Current note1		-15	A
P_D	Power Dissipation	T_C = 25℃	1.7	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		74	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics

(T_A = 25 °C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D= -250μA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-0.45	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-4.5V, I_D =-4.1A	-	35	46	mΩ
		V_{GS} =-2.5V, I_D =-3A	-	46	70	
g_{FS}	Forward Transconductance	V_{DS} =-5V, I_D = -2A	-	6	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz	-	95	-	pF
C_{oss}	Output Capacitance		-	13	-	pF
C_{rss}	Reverse Transfer Capacitance		-	117	-	pF
Q_g	Total Gate Charge	V_{DS} = -10V, I_D = -4.1A, V_{GS} = -4.5V	-	7.8		nC
Q_{gs}	Gate-Source Charge		-	1.2		nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.6		nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -10V, I_D = -3.3A, R_G = 1Ω, V_{GEN}=-4.5V, R_L=1.2Ω	-	1	-	ns
t_r	Turn-on Rise Time		-	35	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	30	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.1	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-15	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -4.1A	-	-	-1.2	V
t_{rr}	Reverse Recovery Time	V_{GS} =0V, I_S=-4.1A, di/dt=100A/μs	-	2	-	ns
Q_{rr}	Reverse Recovery Charge		-	9	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

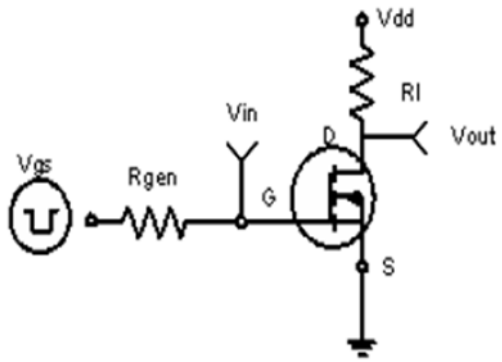


Figure1:Switching Test Circuit

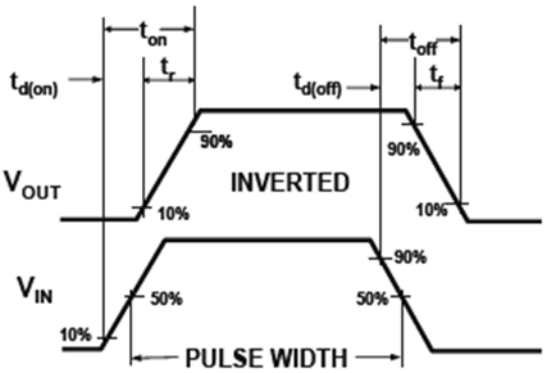
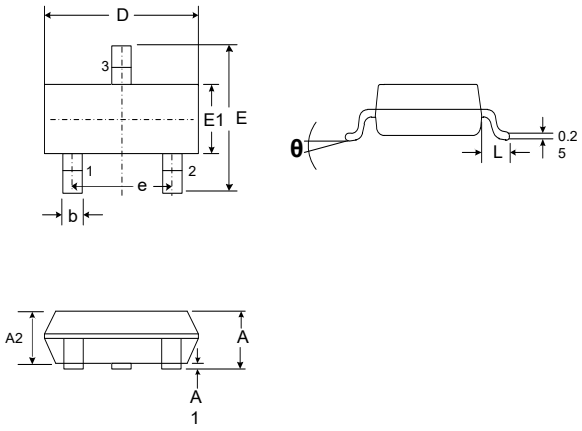


Figure2:Switching Waveforms

Package Dimensions



SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.89	1.12	0.035	0.044
A1	0.01	0.10	0.0006	0.0043
A2	0.88	1.02	0.035	0.040
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.082	0.104
E1	1.20	1.40	0.047	0.055
e	1.90BSC		0.75 BSC	
L	0.40	0.60	0.015	0.024
θ	0	8°	0	8°

Ordering information

Order code	Package	Packaging option	Base quantity	Packaging specification
RDT2305A	SOT-23	Tape and reel	3000pcs / reel	EIA STD RS-481

Revision history

Date	Revision	Changes
28-May-2020	1.0	Initial release

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