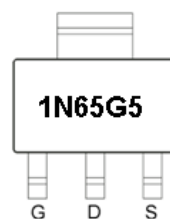


Main Product Characteristics:

V_{DSS}	650V
$R_{DS(on)}$	8Ω(typ)
I_D	1A


SOT223

Marking and pin Assignment

Schematic diagram
Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature


Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	1	A
I_{DM}	Pulsed Drain Current ②	4	
P_D @TC = 25°C	Power Dissipation ③	2	W
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy @ L=60mH	60	mJ
I_{AS}	Avalanche Current @ L=60mH	1	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

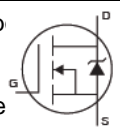
Thermal Resistance

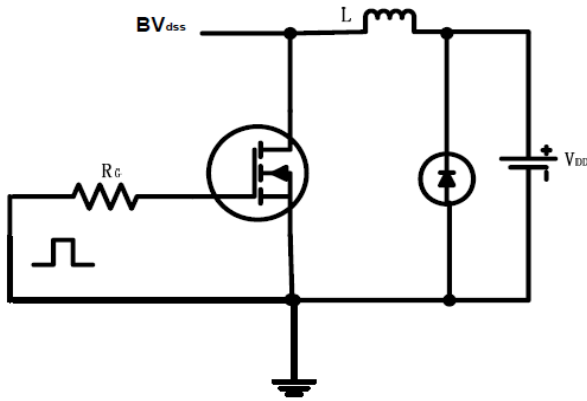
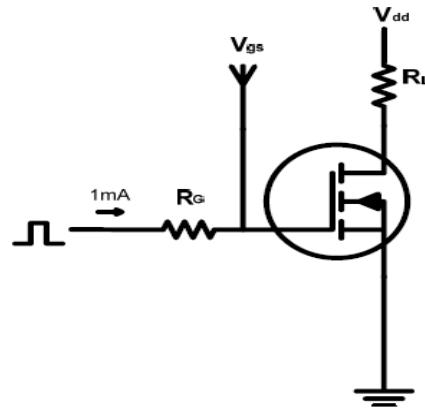
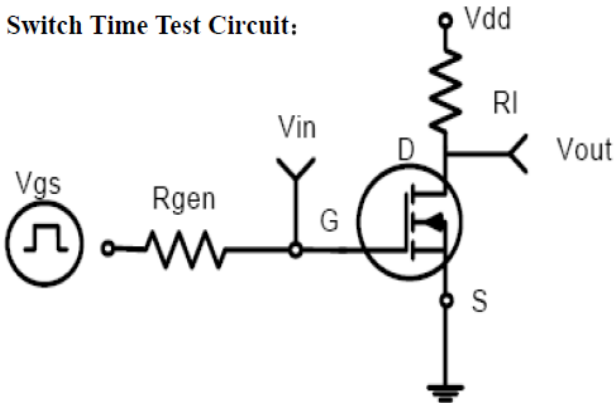
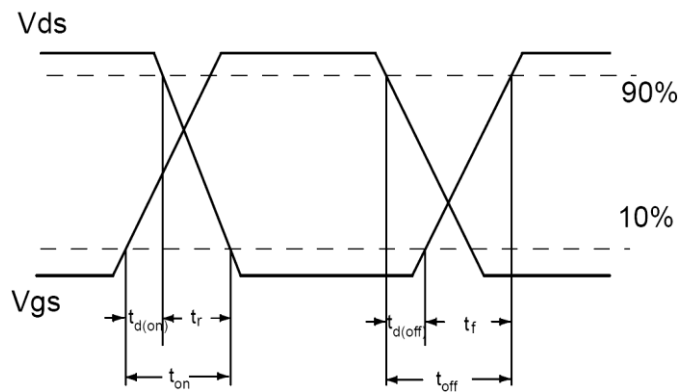
Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	13	$^{\circ}C/W$
$R_{\theta JA}$	Junction-to-Ambient ($t \leq 10s$) ④	—	60	$^{\circ}C/W$

Electrical Characterizes @ $T_A=25^{\circ}C$ unless otherwise specified

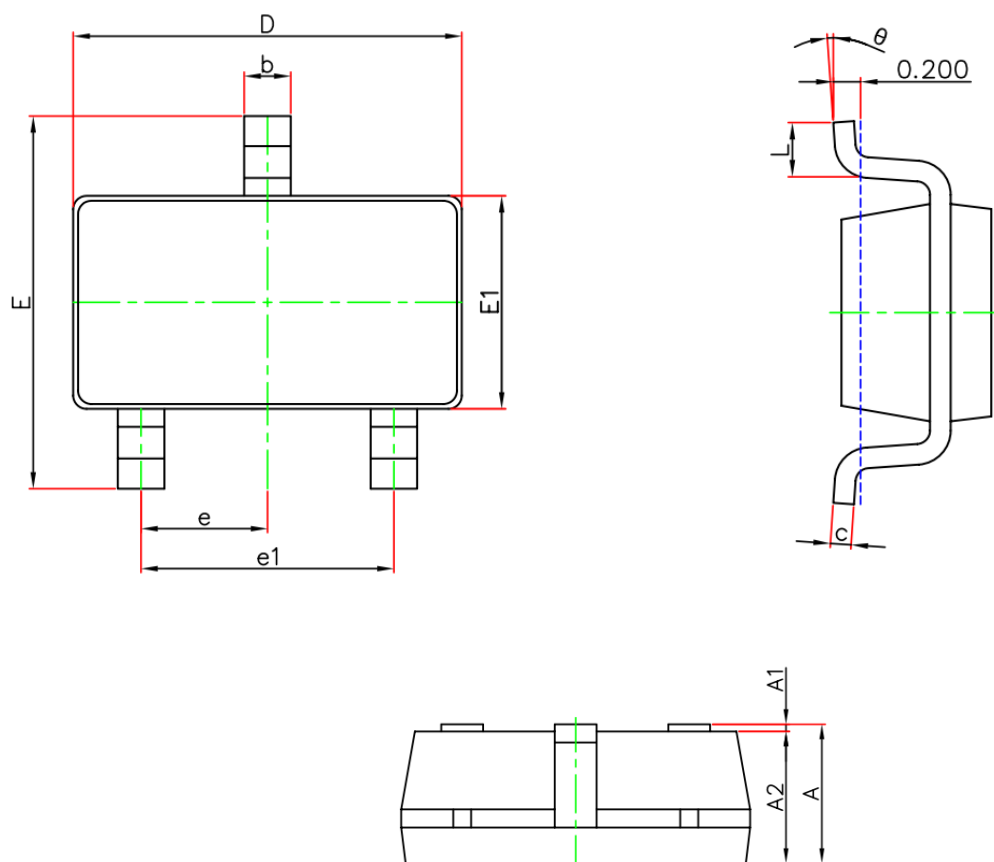
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	650	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	8	10	Ω	$V_{GS}=10V, I_D = 0.5A$
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 650V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 30V$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS} = -30V$
Q_g	Total gate charge	—	6.5	—	nC	$I_D = 1A$
Q_{gs}	Gate-to-Source charge	—	1.6	—		$V_{DD}=480V$
Q_{gd}	Gate-to-Drain("Miller") charge	—	3.5	—		$V_{GS} = 10V$
$t_{d(on)}$	Turn-on delay time	—	10	—	nS	$V_{GS}=10V, V_{DS} = 300V,$ $R_{GEN}=25\Omega$ $I_D = 1A$
t_r	Rise time	—	8	—		
$t_{d(off)}$	Turn-Off delay time	—	16	—		
t_f	Fall time	—	15	—		
C_{iss}	Input capacitance	—	150	—	pF	$V_{GS} = 0V$
C_{oss}	Output capacitance	—	20	—		$V_{DS} = 25V$
C_{riss}	Reverse transfer capacitance	—	6	—		$f = 1MHz$

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	1	A	MOSFET symb showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	4	A	
V_{SD}	Diode Forward Voltage	—	0.95	1.4	V	$I_S=1A, V_{GS}=0V, T_J= 25^{\circ}C$

Test circuits and Waveforms
EAS test circuits:

Gate charge test circuit:

Switch Time Test Circuit:

Switch Waveforms:

Notes:

- ① Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 75A.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Mechanical Data:


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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