

P-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	-20	V
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$) Typ.	560	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$) Typ.	830	m Ω
I_D ($T_A=25^{\circ}C$)	-0.5	A

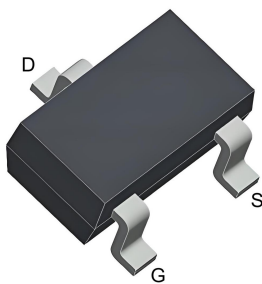
Features

- Low Input Capacitance
- Fast Switching Speed
- ESD protection up to 2 kV

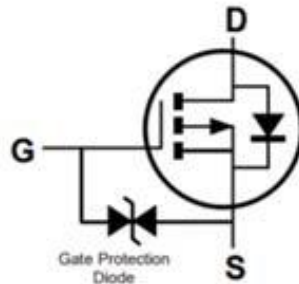
Applications

- Load Switching
- Logic Level Shift

Pin Configuration



SOT-23



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECDA1013E	SOT-23	7"	3000pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		-20	V
V_{GS}	Gate-Source Voltage		± 10	V
I_D	Continuous Drain Current at $V_{GS}=10V^A$	$T_A=25^{\circ}C$	-0.5	A
		$T_A=70^{\circ}C$	-0.4	A
I_{DM}	Pulse Drain Current Tested ^B		-2.3	A
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.32	W
T_J, T_{STG}	Junction and Storage Temperature Range		-55 to +150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^A	390	$^{\circ}C/W$

Electrical Characteristics (at T_J =25°C Unless Otherwise Noted)

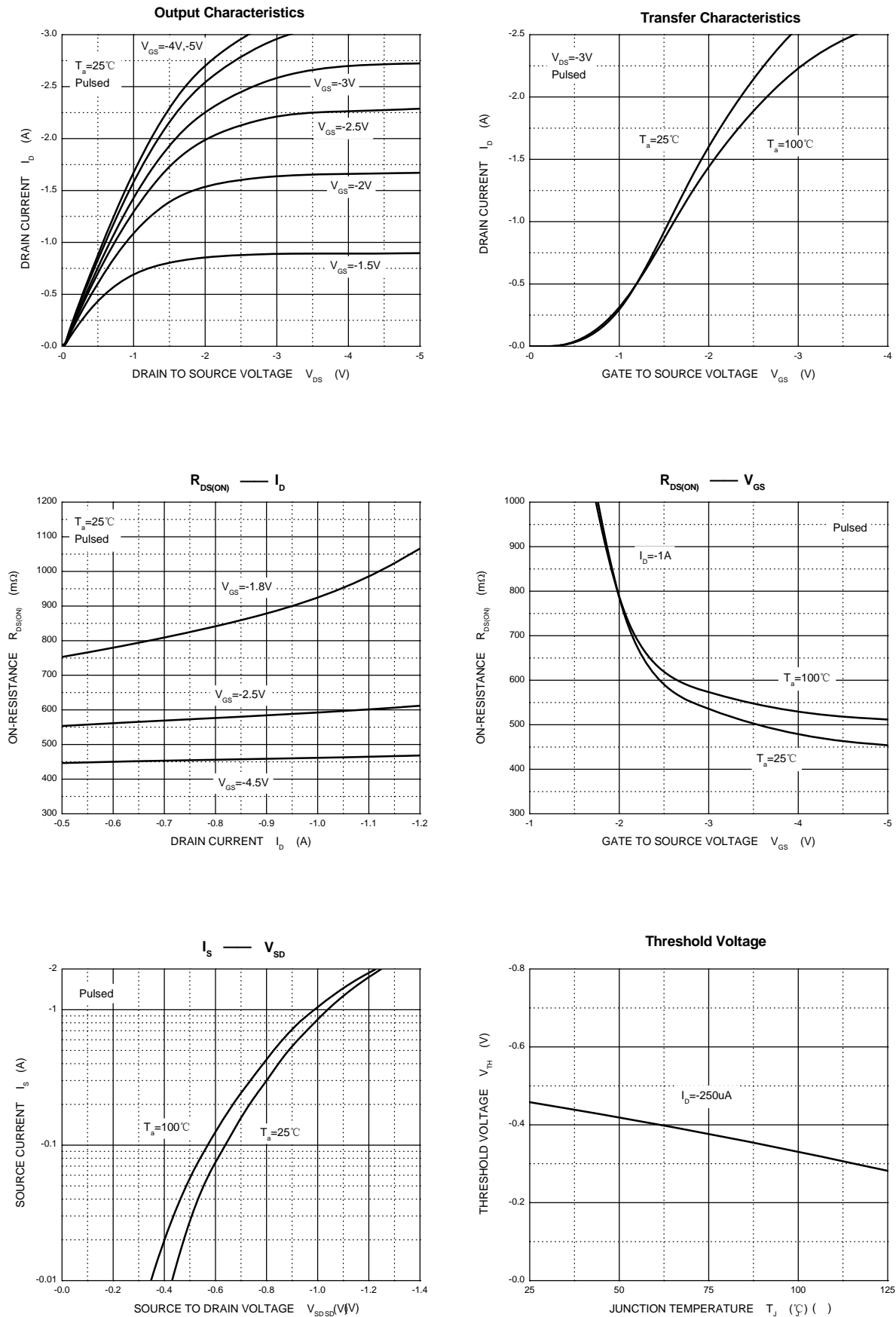
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V	--	--	-0.5	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V, V _{GS} =±8V	--	--	±2	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-0.35	--	-1.2	V
R _{DS(ON)}	Drain-Source On-State Resistance ^B	V _{GS} =-4.5V, I _D =-0.5A	--	560	850	mΩ
		V _{GS} =-2.5V, I _D =-0.3A	--	830	1260	mΩ
V _{SD}	Forward Voltage	I _{SD} =-0.5A, V _{GS} =0V	--	--	-1.2	V
Dynamic and Switching Parameters ^C						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-16V f=1MHZ	--	152	--	pF
C _{oss}	Output Capacitance		--	18	--	pF
C _{rss}	Reverse Transfer Capacitance		--	6	--	pF
Q _g	Total Gate Charge	V _{DS} =-16V, I _D =-0.2A V _{GS} =-4.5V	--	2.8	--	nC
Q _{gs}	Gate-Source Charge		--	2.1	--	nC
Q _{gd}	Gate-Drain Charge		--	0.5	--	nC
t _{D(on)}	Turn-on Delay Time	V _{DD} =-10V I _D =-0.2A, R _{GEN} =10Ω, V _{GS} =-5V	--	51.3	--	ns
t _r	Turn-on Rise Time		--	24.2	--	ns
t _{D(off)}	Turn-off Delay Time		--	246	--	ns
t _f	Turn-off Fall Time		--	81.2	--	ns

A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 2OZ copper.

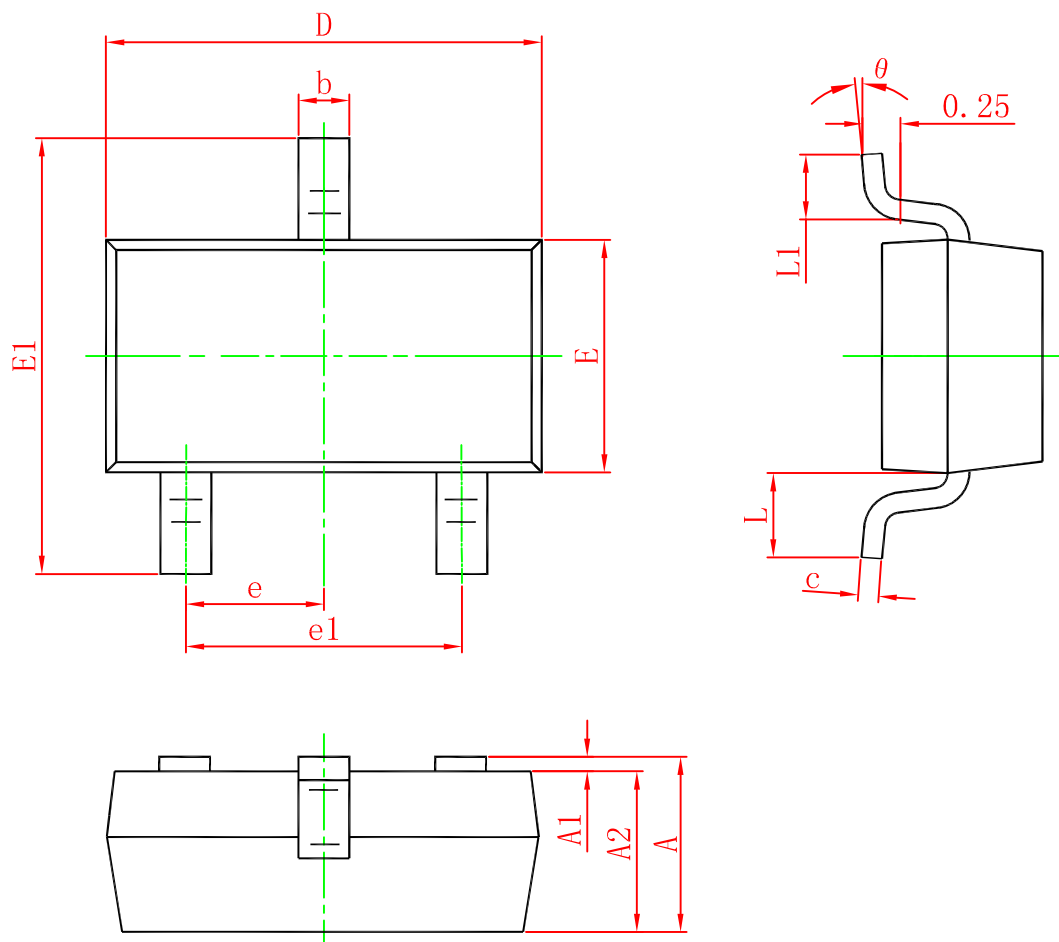
B. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

C. Guaranteed by design, not subject to production testing.

Typical Characteristics



SOT-23 Package Information



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°