N-Channel and P-Channel 20V(D-S) MOSFET

Product summary			
V_{DS}	20	-20	V
$R_{DS(ON)}$(at V_{GS}=4.5V) Typ.	250	350	mΩ
$R_{DS(ON)}$(at V_{GS}=2.5V) Typ.	300	440	mΩ
I_D(T_A=25℃)	0.65	-0.55	A

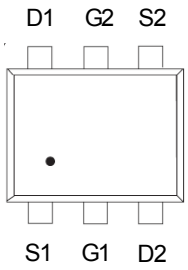
Features

- Low $R_{DS(ON)}$
- ESD Protected Gate

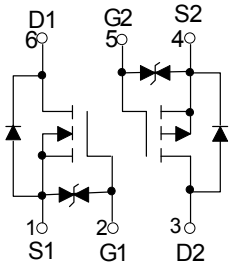
Applications

- Logic Level Shift
- Load switch

Pin Configuration



SOT-563



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECDJ1014E	SOT-563	7″	3000pcs

Absolute Maximum Ratings (at T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter		N-Rating	P-Rating	Units
V_{DS}	Drain-Source Voltage		20	-20	V
V_{GS}	Gate-Source Voltage		±10	±8	V
I_D	Continuous Drain Current [A]	T_A=25℃	0.65	-0.55	A
		T_A=70℃	0.5	-0.45	A
I_{DM}	Pulse Drain Current Tested [B]		3	-2.8	A
P_D	Power Dissipation [A]		0.15	0.15	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient [A]	417	℃/W

N-Channel Electrical Characteristics (at T_J =25℃ 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}=16V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±10V	--	--	±30	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.4	--	1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=4.5V,I_D=0.5A	--	250	380	mΩ
		V_{GS}=2.5V,I_D=0.2A	--	300	440	mΩ
		V_{GS}=1.8V,I_D=0.1A	--	370	530	mΩ
V_{SD}	Diode Forward Voltage	I_S=0.5A,V_{GS}=0V	--	--	1.2	V
Dynamic Parameters [C]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=10V f=1MHZ	--	67	--	pF
C_{oss}	Output Capacitance		--	18	--	pF
C_{rss}	Reverse Transfer Capacitance		--	6	--	pF
Q_g	Total Gate Charge	V_{DS}=10V,I_D=0.5A V_{GS}=4.5V	--	1.4	--	nC
Q_{gs}	Gate-Source Charge		--	0.21	--	nC
Q_{gd}	Gate-Drain Charge		--	0.21	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=10V I_D=0.15A,R_G=10Ω, V_{GS}=4.5V	--	2.8	--	ns
t_r	Turn-on Rise Time		--	20	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	23	--	ns
t_f	Turn-off Fall Time		--	24	--	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.

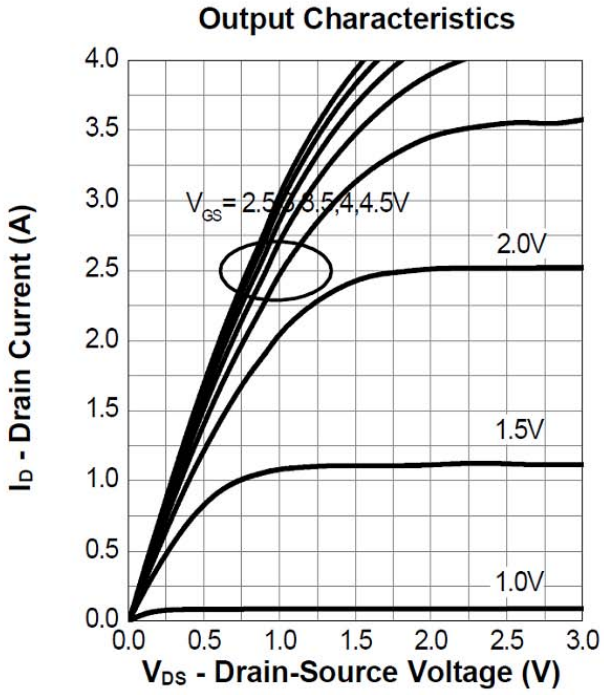
P-Channel Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

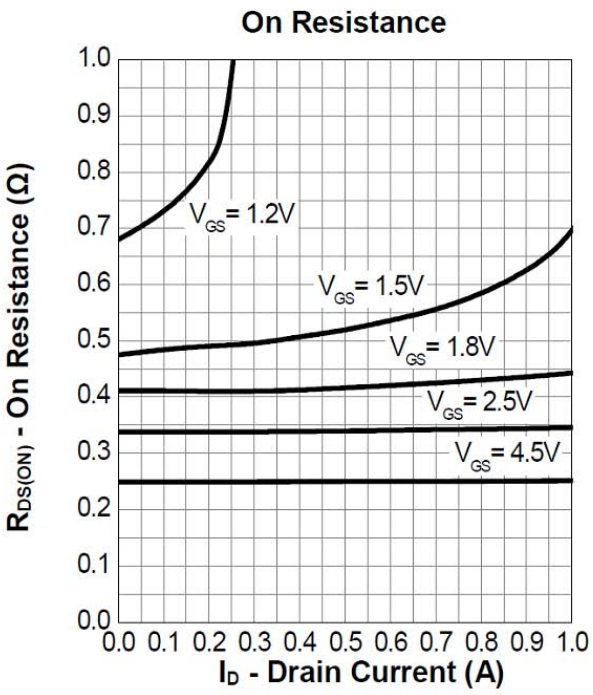
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V,V_{GS}=0V	--	--	-1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±6V	--	--	±10	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-0.45	--	-1.2	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=-4.5V,I_D=-0.5A	--	350	480	mΩ
		V_{GS}=-2.5V,I_D=-0.3A	--	440	670	mΩ
		V_{GS}=-1.8V,I_D=-0.1A	--	780	--	mΩ
V_{SD}	Diode Forward Voltage	I_S=-0.35A,V_{GS}=0V	--	--	-1.2	V
Dynamic 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_G=10Ω, V_{GS}=-4.5V	--	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

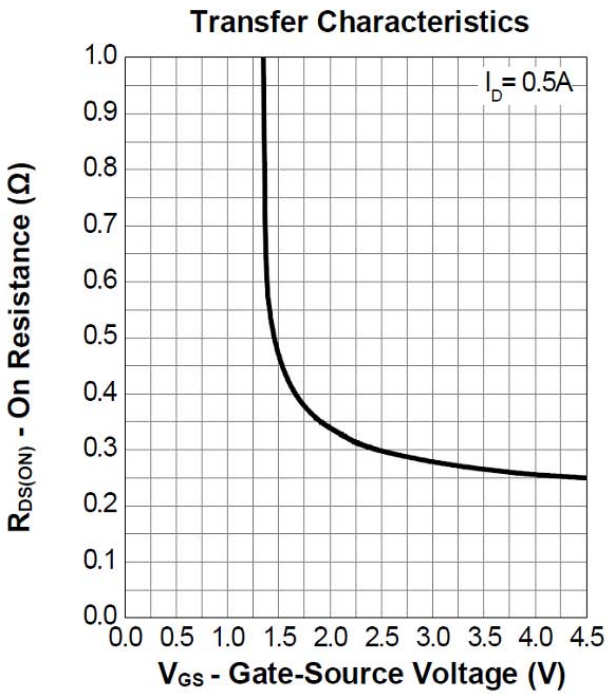
B.Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

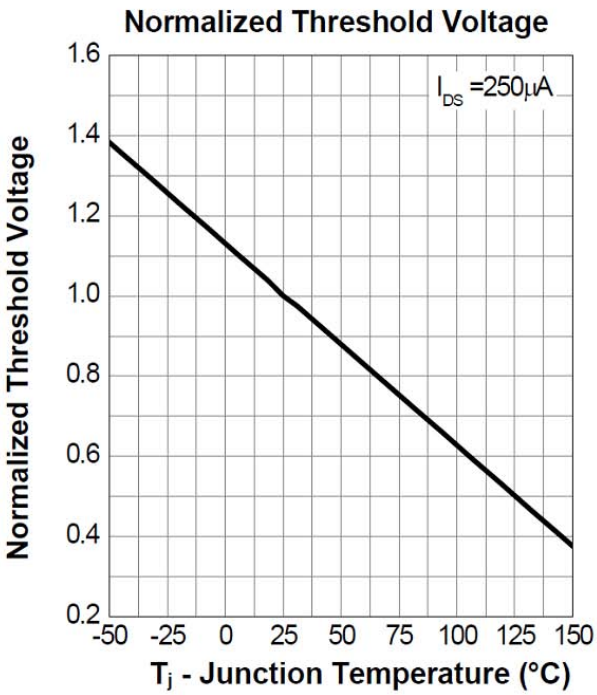
C. Guaranteed by design, not subject to production testing.

N-Channel Typical Characteristics

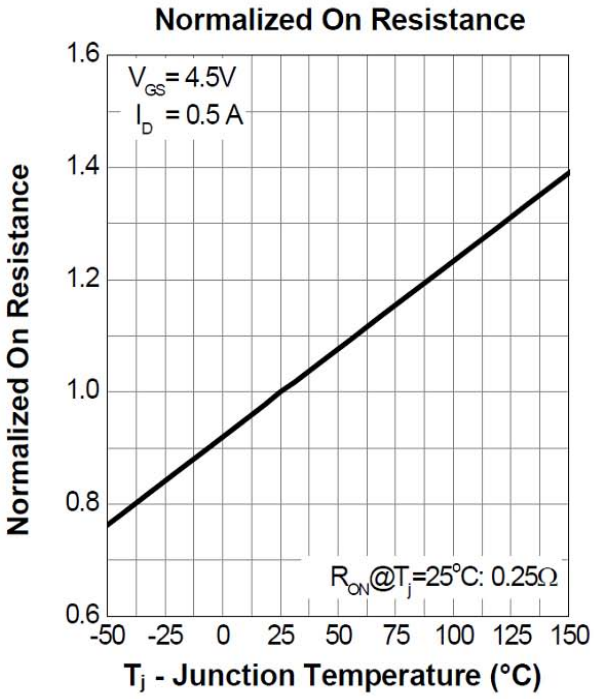


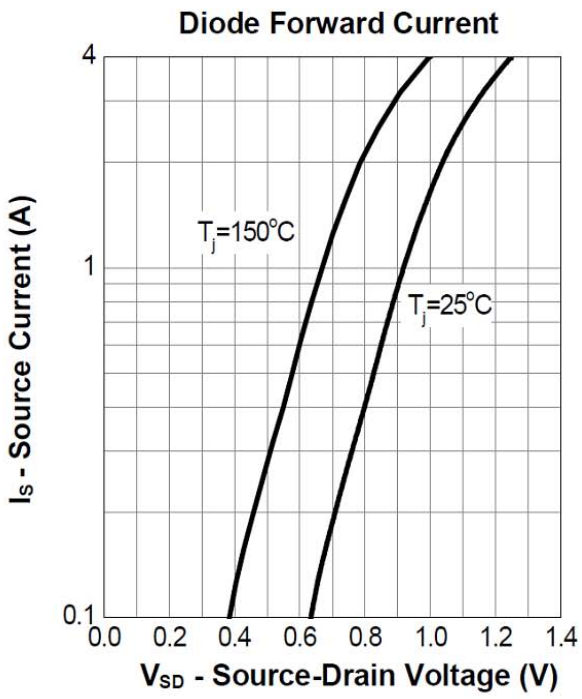


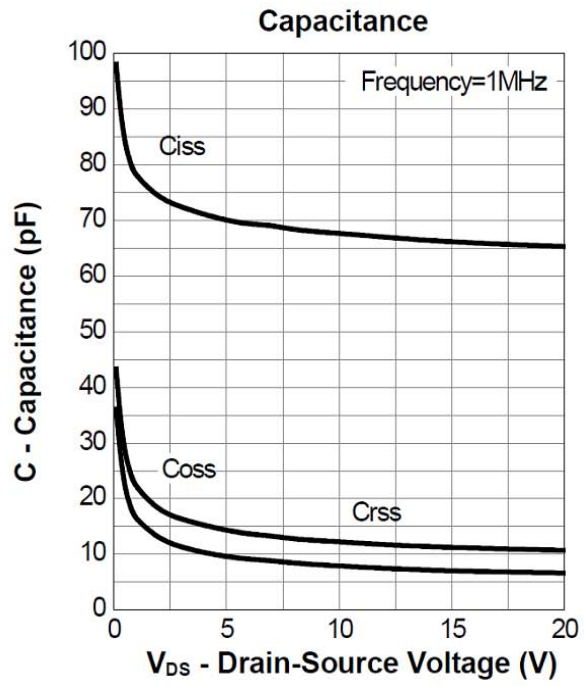


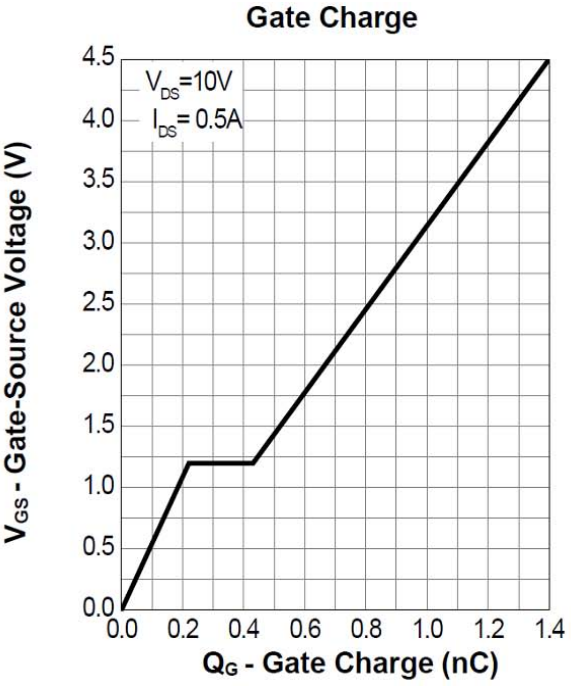


N-Channel Typical Characteristics

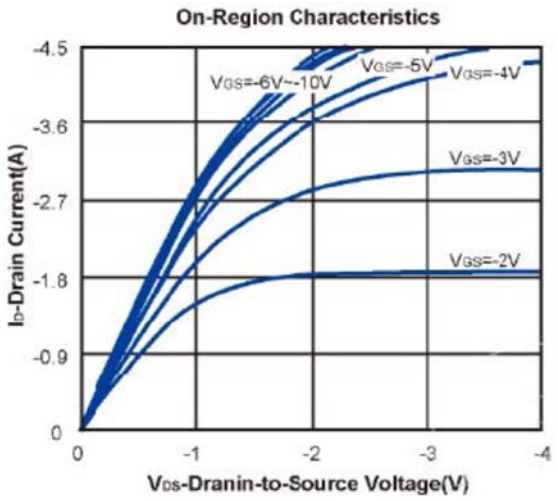


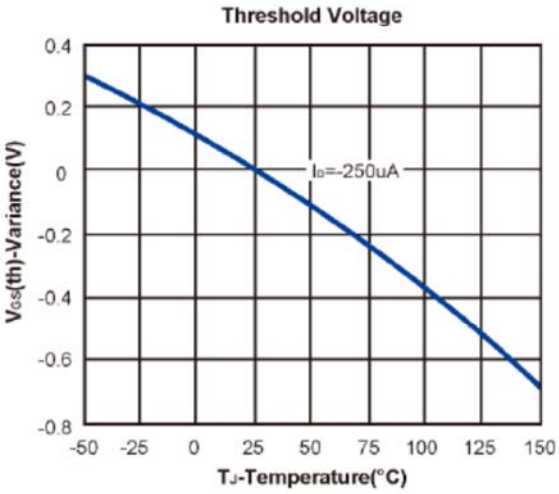


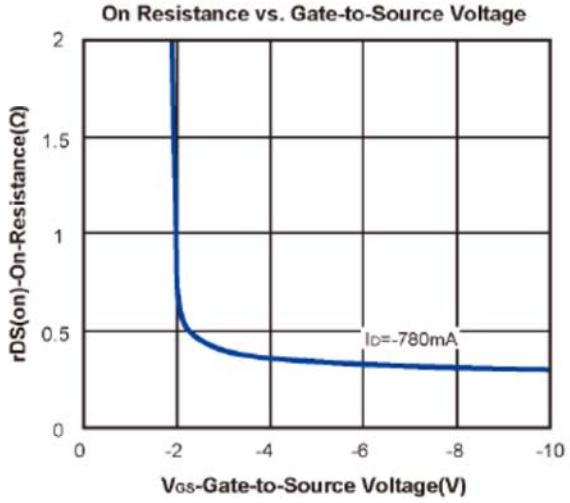


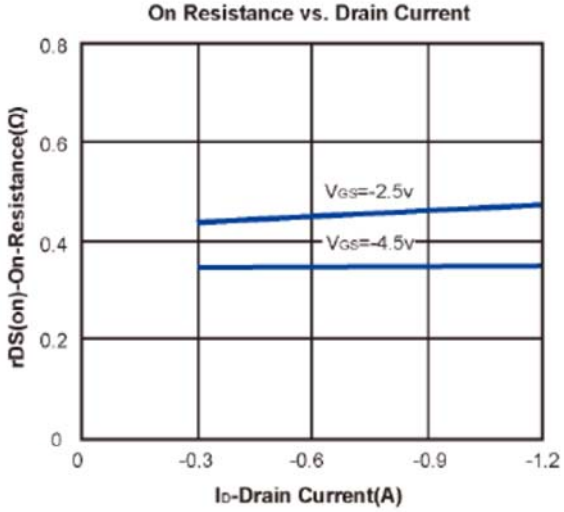


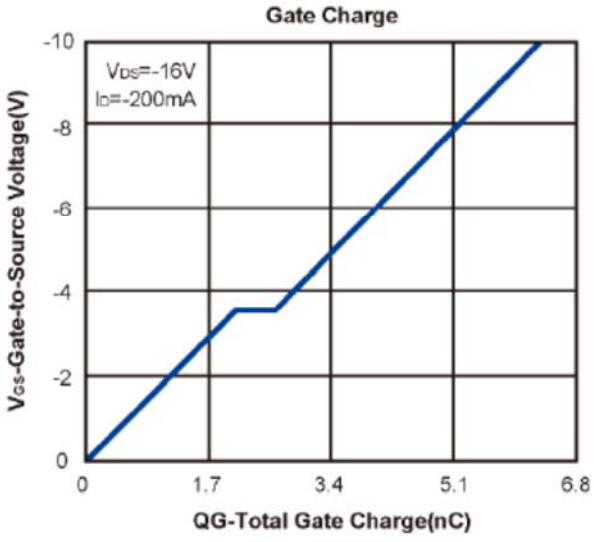
P-Channel Typical Characteristics

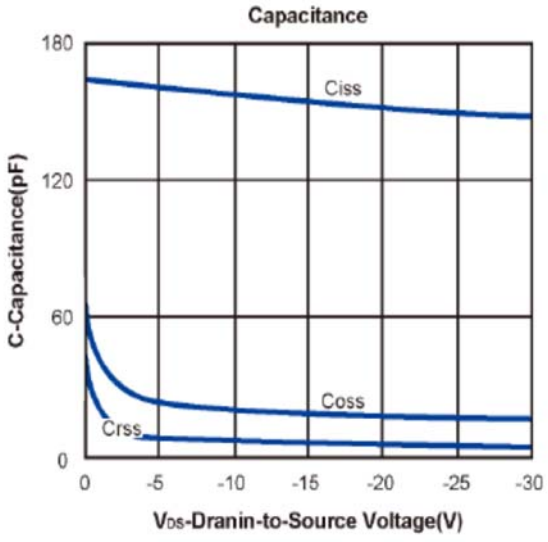




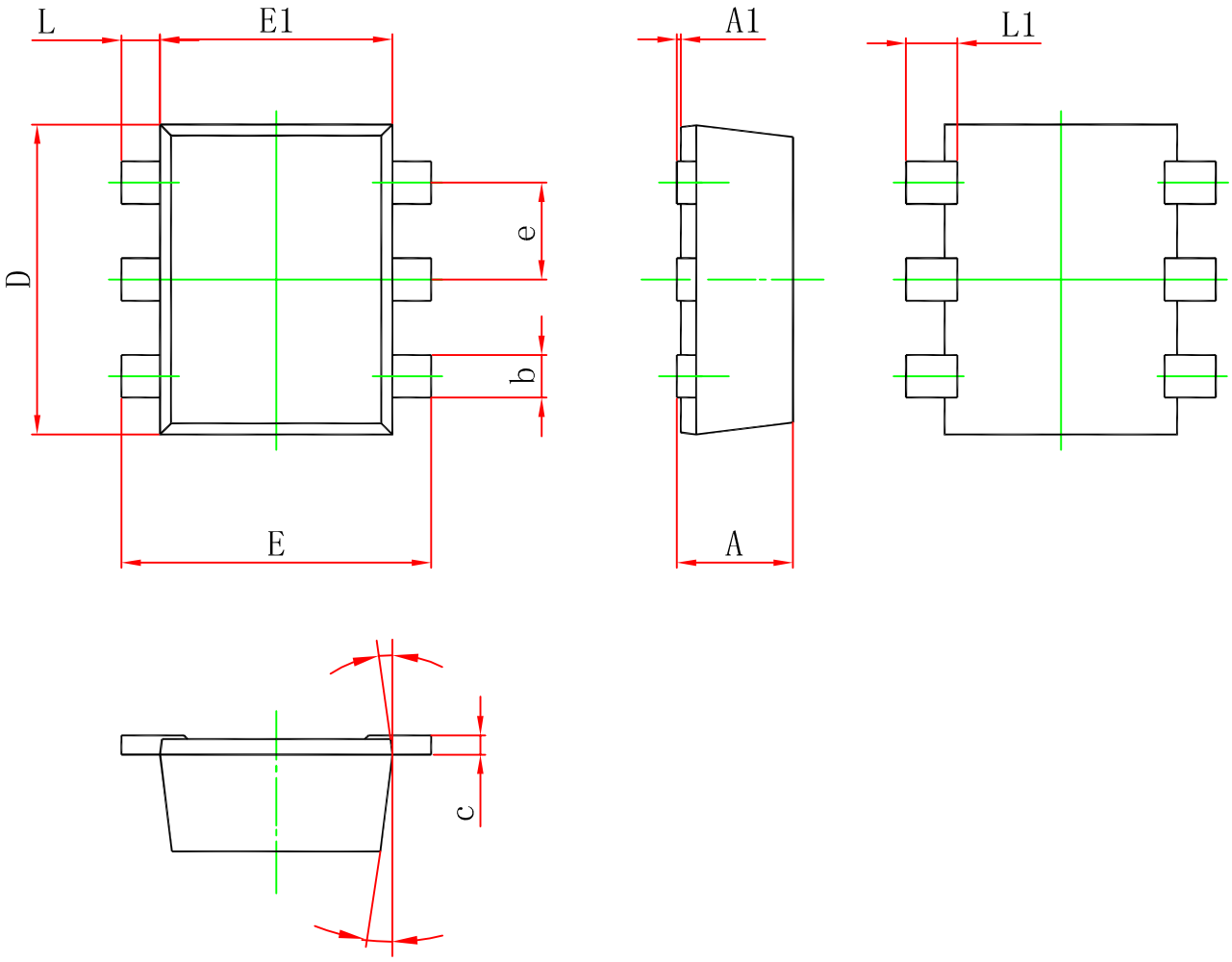








SOT-563 Package Information



Symbol	Dimensions In Millimeters		Dimensions in inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
L1	0.200	0.400	0.008	0.016
θ	7 °REF.		7 °REF.	