

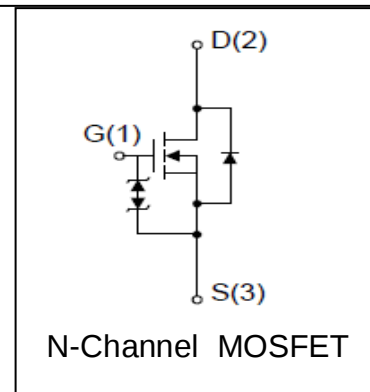
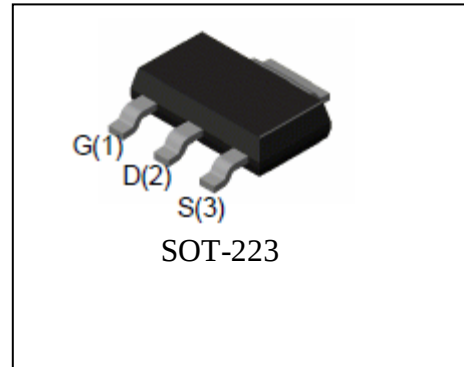
Features

- 100V/4A,
 $R_{DS(ON)} = 72m\Omega$ (Typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 80m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
- ESD Protected
- Reliable and Rugged
- Ultra Low On-Resistance
- Lead Free and Green Available

Applications

- DC-DC Converter
- Motor Driving

Pin Description



Absolute Maximum Ratings

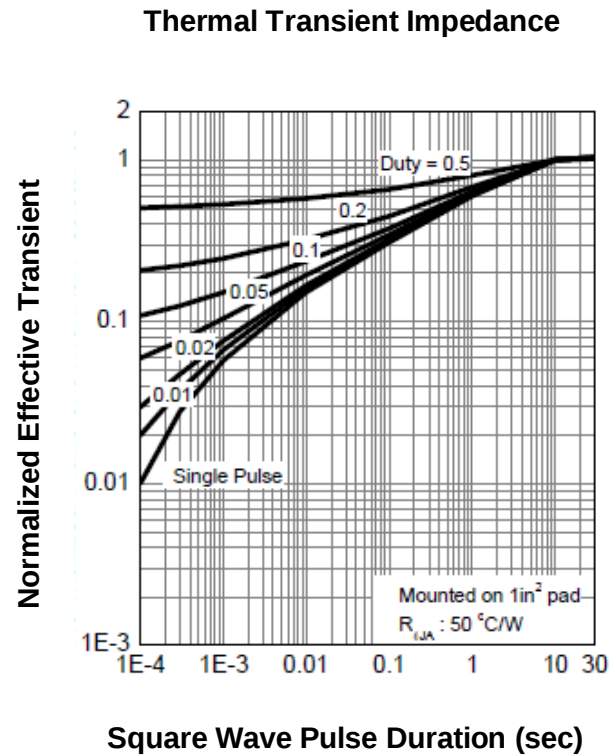
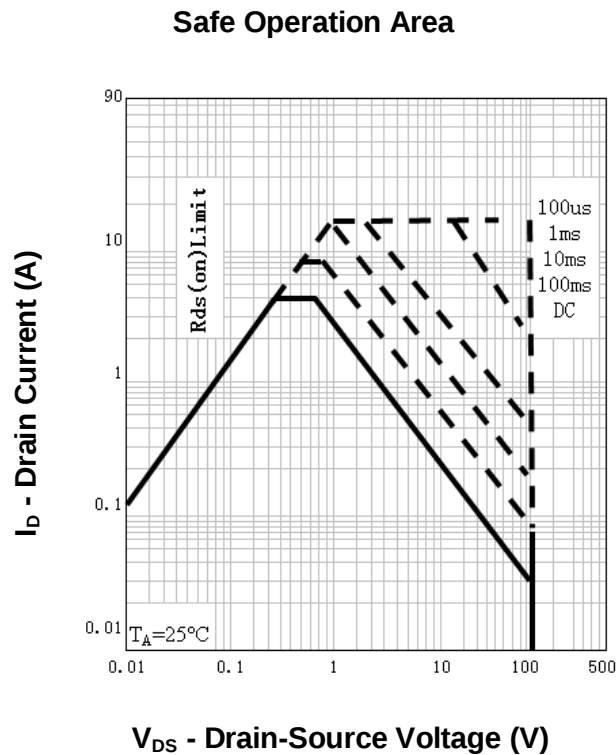
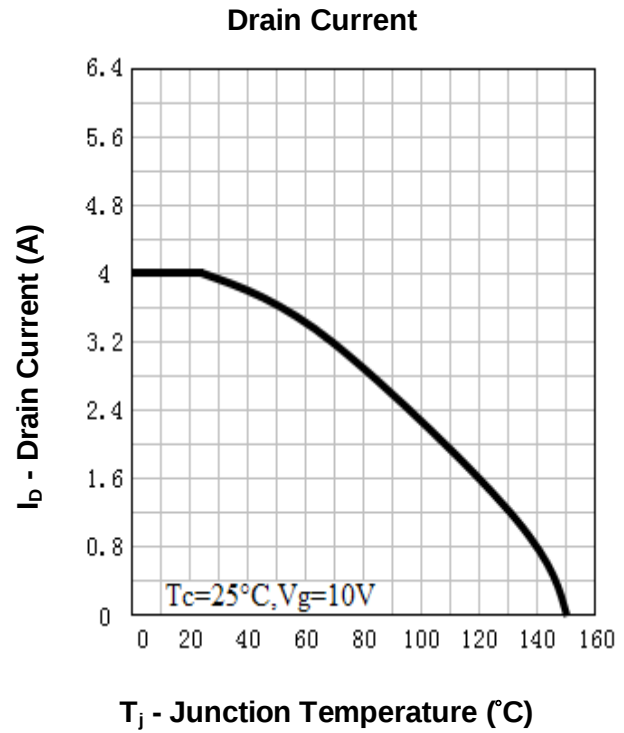
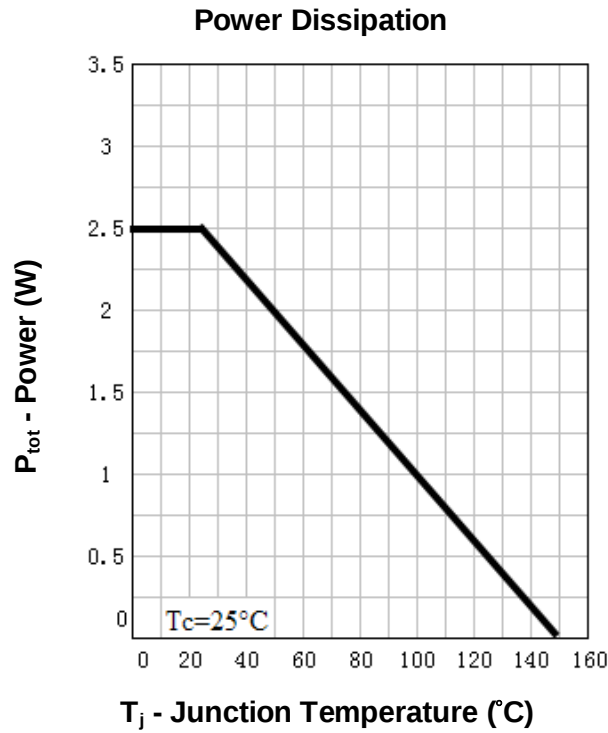
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	3	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	16	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _A =25°C	4 ^①	A
		T _A =70°C	3.4	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJA} ^②	Thermal Resistance-Junction to Ambient		50	°C/W

Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU1HE4D			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.5	2.0	2.7	V
I _{GSS}	Gate Leakage Current	V _{GS} =±16V, V _{DS} =0V			±10	uA
R _{DS(ON)} ^③	Drain-Source On-state Resistance	V _{GS} = 10V, I _{DS} =3.7A		72	80	mΩ
		V _{GS} = 4.5V, I _{DS} =2A		80	95	mΩ
Diode Characteristics						
V _{SD} ^③	Diode Forward Voltage	I _{SD} =2.5A, V _{GS} =0V			1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =2.5A, dI _{SD} /dt=100A/μs		40		ns
Q _{rr}	Reverse Recovery Charge			75		nC
Dynamic Characteristics ^④						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		0.7		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 50V, Frequency=1.0MHz		465		pF
C _{oss}	Output Capacitance			46		
C _{rss}	Reverse Transfer Capacitance			25		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, R _L =20Ω, I _{DS} =2.5A, V _{GEN} = 10V, R _G =25Ω		5		ns
t _r	Turn-on Rise Time			7		
t _{d(OFF)}	Turn-off Delay Time			11		
t _f	Turn-off Fall Time			6		
Gate Charge Characteristics ^④						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} = 10V, I _{DS} =2.5A		18	22	nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			6		

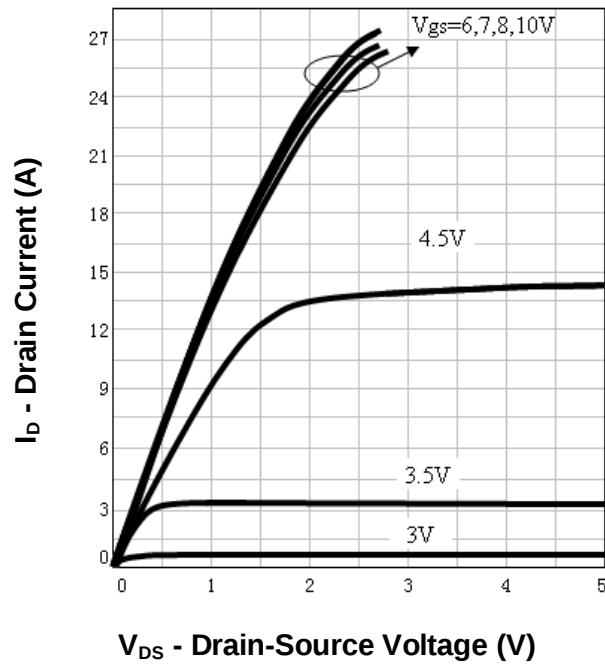
- Notes: ① Current limited by maximum junction temperature.
 ② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

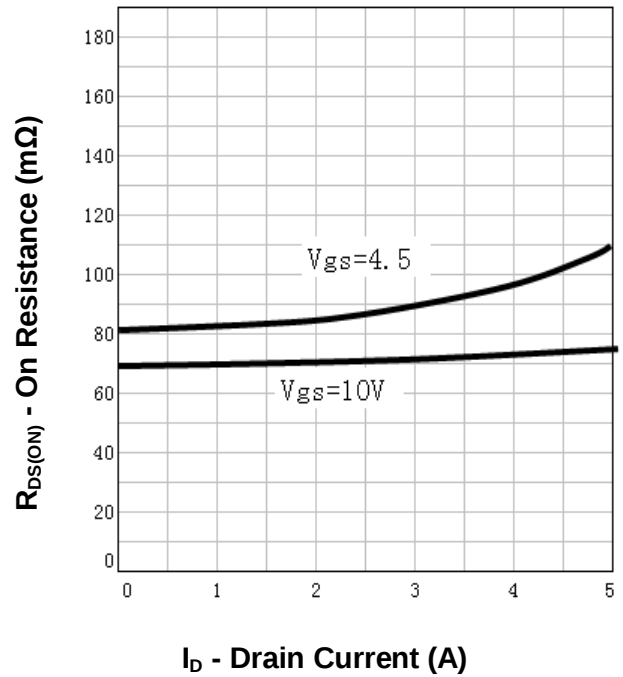


Typical Characteristics

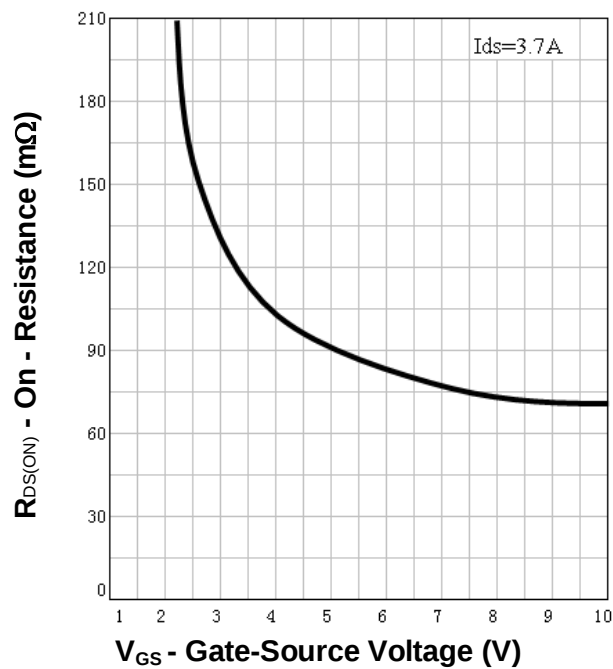
Output Characteristics



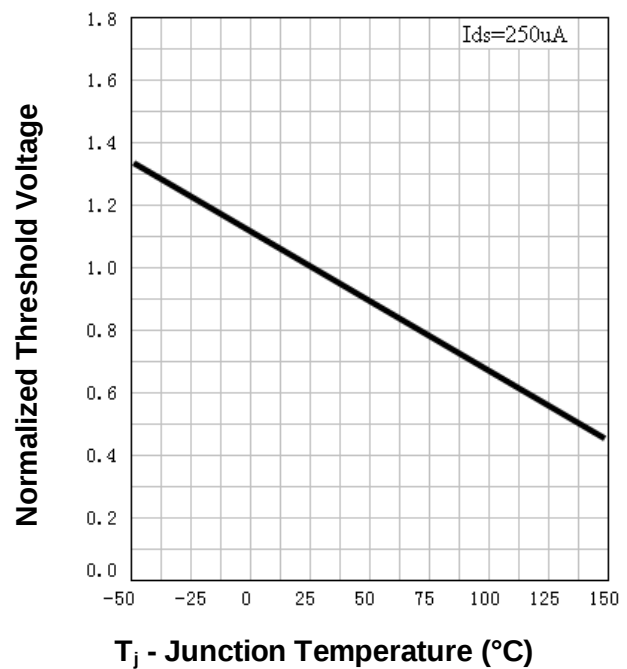
Drain-Source On Resistance



Drain-Source On Resistance

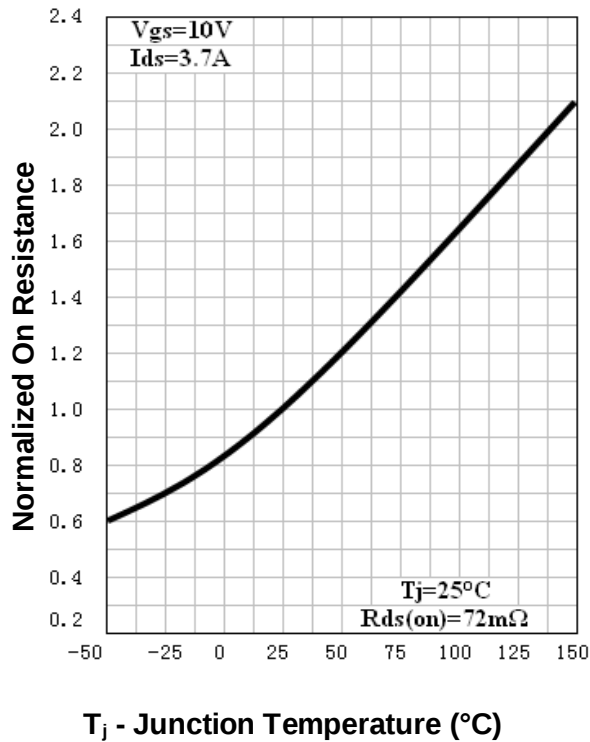


Gate Threshold Voltage

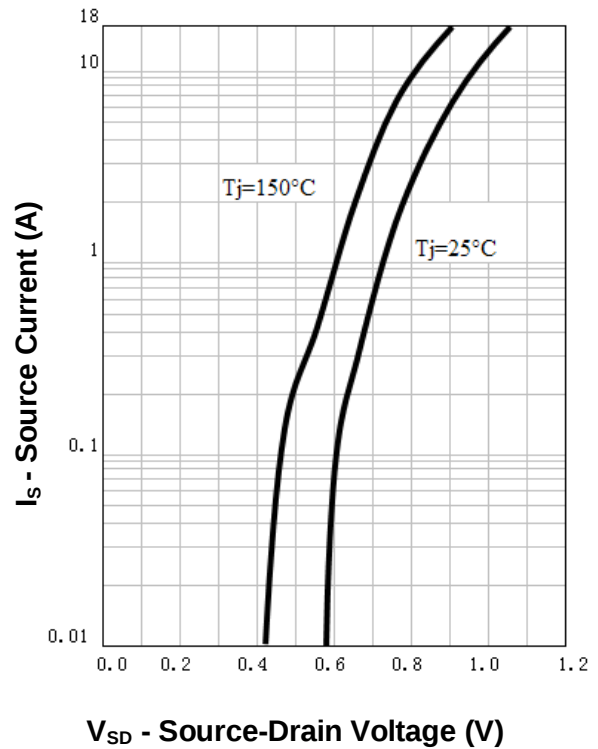


Typical Characteristics

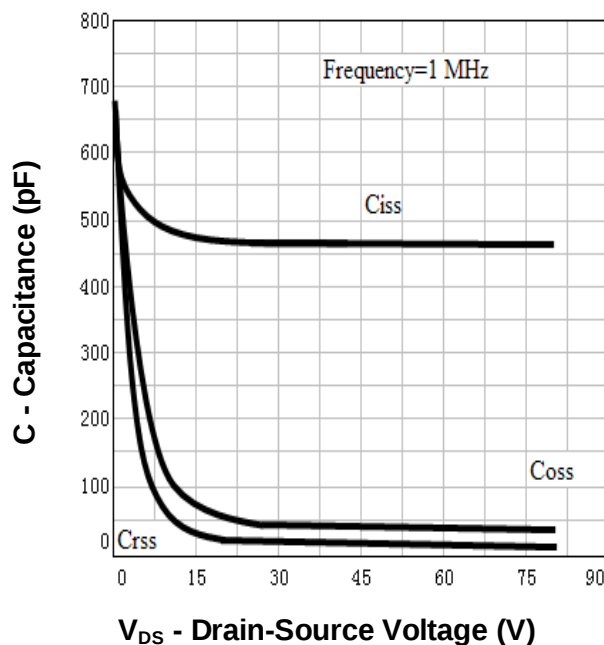
Drain-Source On Resistance



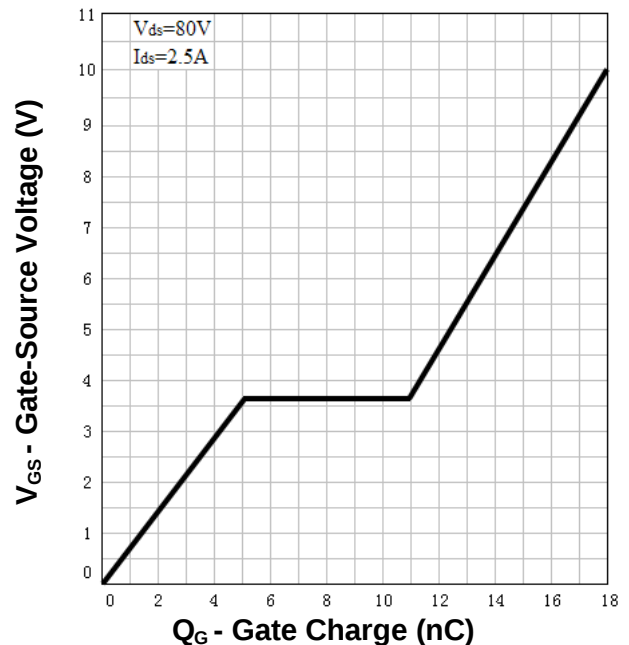
Source-Drain Diode Forward



Capacitance



Gate Charge

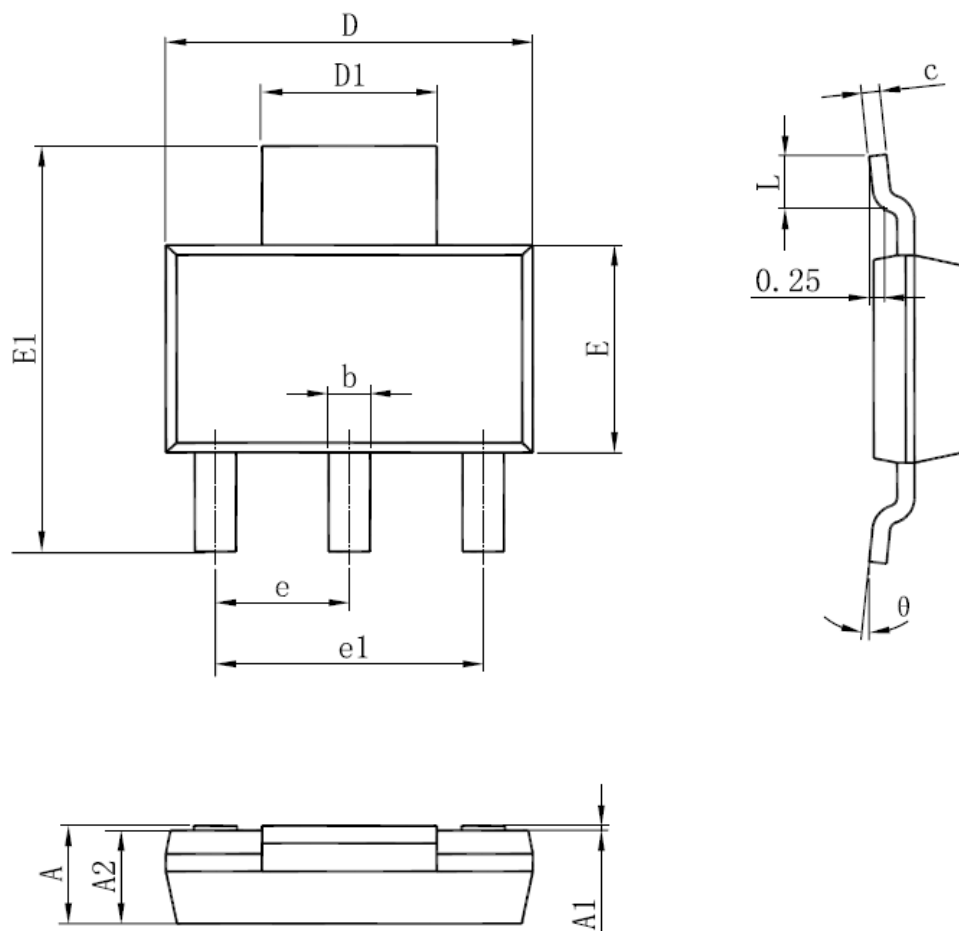


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1HE4D	RU1HE4D	SOT-223	Tape&Reel	2500	13''	12mm

Package Information

SOT-223



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	1.520	1.800	0.060	0.071	E	3.300	3.700	0.130	0.146
A1	0.000	0.100	0.000	0.004	E1	6.830	7.070	0.269	0.278
A2	1.500	1.700	0.059	0.067	e	2.300(BSC)		0.091(BSC)	
b	0.660	0.820	0.026	0.032	e1	4.500	4.700	0.177	0.185
c	0.250	0.350	0.010	0.014	L	0.900	1.150	0.035	0.045
D	6.200	6.400	0.244	0.252	θ	0°	10°	0°	10°
D1	2.900	3.100	0.114	0.122					

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

Customer Service

Worldwide Sales and Service:

Sales@ruichips.com

Technical Support:

Technical@ruichips.com

Investor Relations Contacts:

Investor@ruichips.com

Marcom Contact:

Marcom@ruichips.com

Editorial Contact:

Editorial@ruichips.com

HR Contact:

HR@ruichips.com

Legal Contact:

Legal@ruichips.com

Shen Zhen RUICHIPS Semiconductor CO., LTD

Room 501, the 5floor An Tong Industrial Building,
NO.207 Mei Hua Road Fu Tian Area Shen Zhen City, CHINA

TEL: (86-755) 8311-5334

FAX: (86-755) 8311-4278

E-mail: Sales-SZ@ruichips.com