Description

ECS3144 is anunipolar Hall effect sensor IC. It incorporates advanced chopper stabilization technology to provide accurate and stable magnetic switch points. The design, specifications and performance have been optimized for applications of solid state switches.

The DR package output transistor will be switched on (BOP) in the presence of a sufficiently strong South pole magnetic field facing the marked side of the package. Similarly, the output will be switched off (BRP) in the presence of a weaker South field and remain off with “0” field. Furthermore, YR package output behavior is reversed with DR.

The package type is in a Halogen Free version was verified by third party organization. Halogen Free package is available by customer’s option

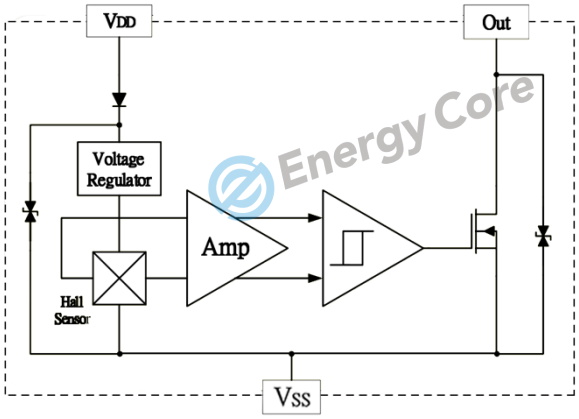
Feature

- Input voltage range : 3V~24V
- Reverse bias protection on power supply pin
- Solid-State reliability
- 85℃ for E spec
- Good ESD protection

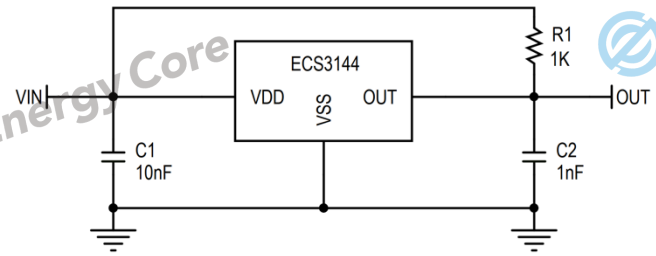
Application

- Solid state switch
- Limit switch
- Current limit
- Interrupter
- Current sensing
- Magnet proximity sensor for reed switch replacement

Functional Block Diagram



Typical Application



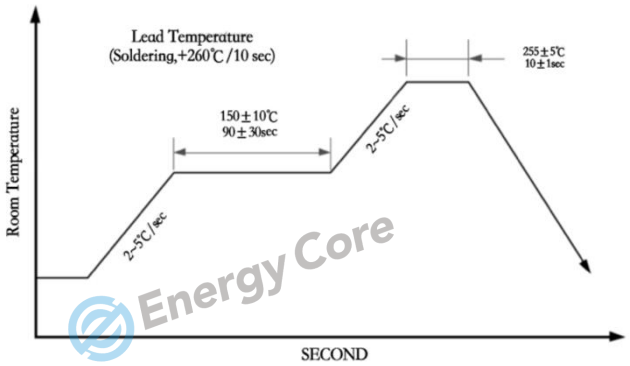
Absolute Maximum Ratings

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage	V_{VDD}				26	V
Output Voltage	V_{OUT}				26	V
Reverse Voltage	V_{VDD}				-26	V
Output Current	I_{OUT}				50	mA
Operating Temperature Range	TA		-40		+85	°C
Storage temperature range	TS		-55		+150	°C
Junction Temperature	TJ				+150	°C
Thermal Resistance		DR/YR	206/543			°C/W
		DR/YR	148/410			°C/W
Package Power Dissipation	PD	YR			230	mW
		DR			606	mW

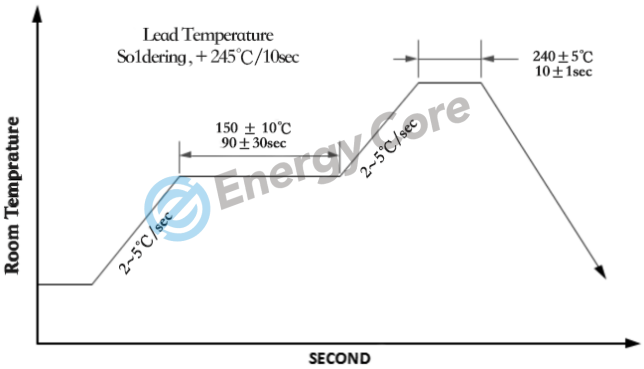
Electrical Characteristics V_{in}=12V,T_A=25℃(unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input Voltage	VDD		3		24	V
Input Current	I	B < B_{OP}		2.5	5	mA
Output Saturation Voltage		I_{OUT} =20mA, B > B_{OP}			400	mV
Output Leakage Current		I_{OF} , B < B_{OP} , V_{OUT} =20mV			10	uA
Output Rise Time	TR	R1=1K, C2=20pF		0.04	0.45	uS
Output Fall Time	TF	R1=820R, C2=20pF		0.18	0.45	uS
Operate Point	BOP		+60 (-100)		+100 (-60)	Gauss
Release Point	BRP		+40 (-80)		+80 (-40)	Gauss
Hysteresis	BHYS			20		Gauss
Electro-Static Discharge	HBM		4			KV

IR Reflow Curve



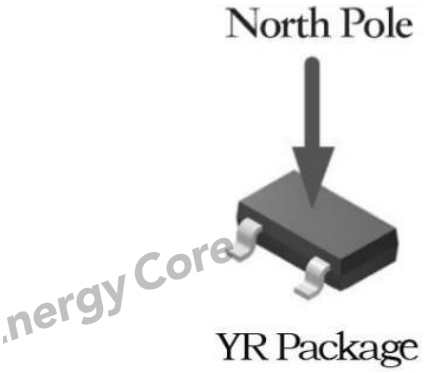
YR Soldering Condition

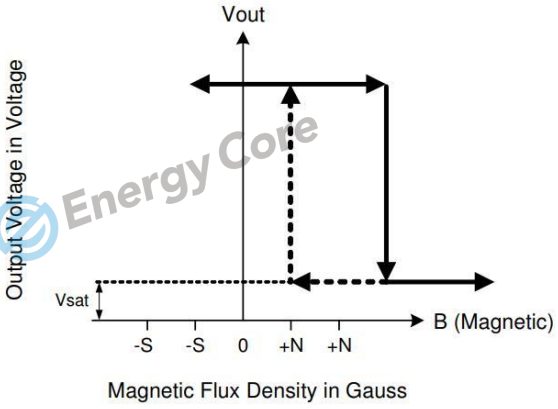


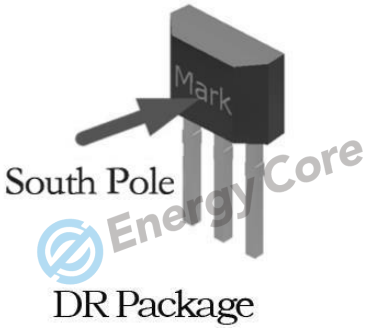
DR Soldering Condition

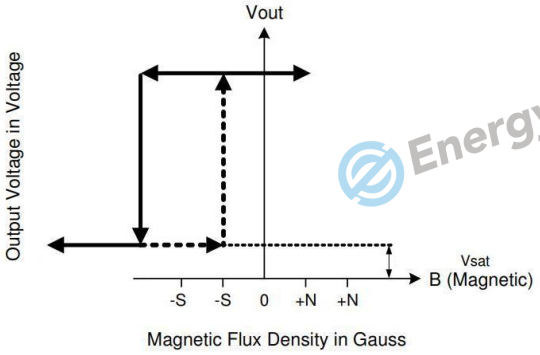
Ordering Information

Part Number*	Package	Top Marking
ECS3144-YR	SOT23-3	44XX
ECS3144-DR	TO-92S-3	3144







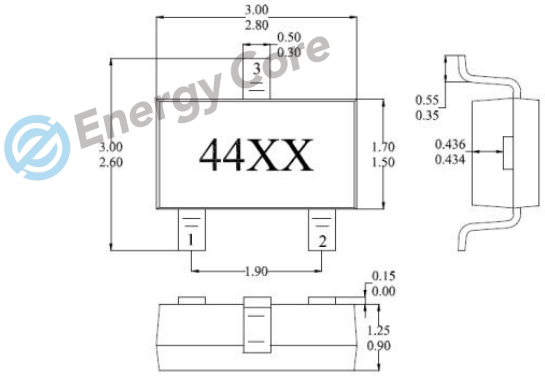


Sensor Location, Package And Marking

YR Package（SOT23-3）

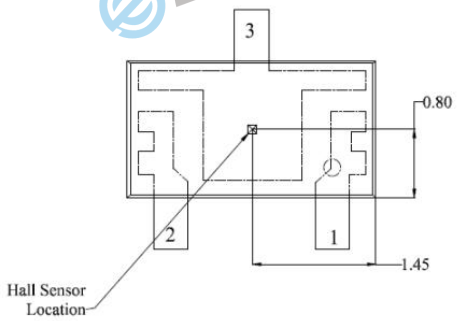
Package (SOT-23)

(Top View)

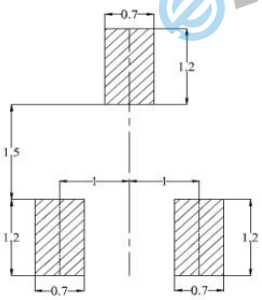


Hall Plate Chip Location

(Bottom view)



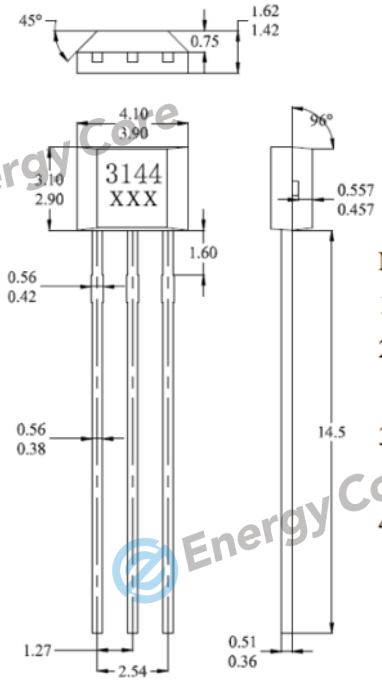
(For reference only)Land Pattern



NOTES:

1. PINOUT (See Top View at left):
   Pin 1 V_{DD}
   Pin 2 Output
   Pin 3 GND
2. Controlling dimension: mm
3. Lead thickness after solder plating will be 0.254mm maximum

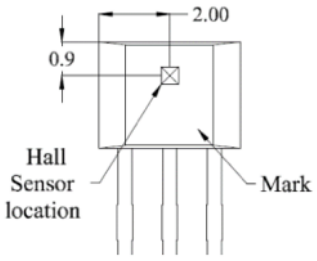
DR Package（TO-92S-3）



NOTES:

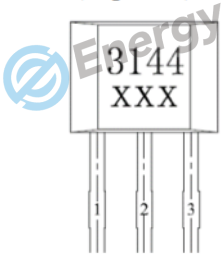
1. Controlling dimension: mm
2. Leads must be free of flash and plating voids
3. Do not bend leads within 1 mm of lead to package interface.
4. PINOUT:
   Pin 1 V_{DD}
   Pin 2 GND
   Pin 3 Output

Hall Chip location

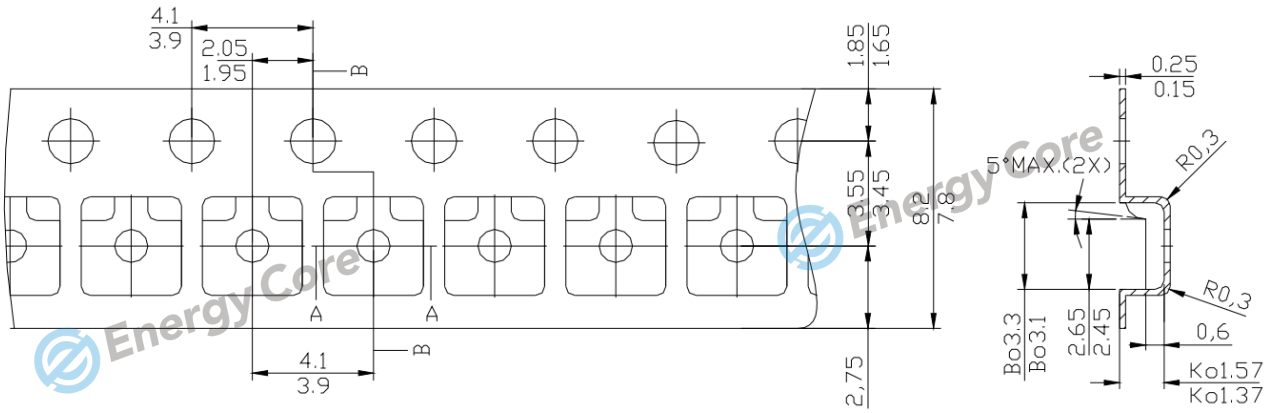


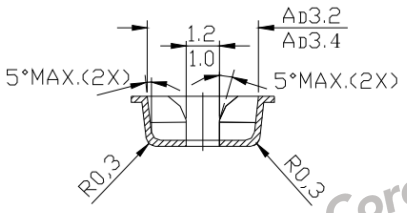
Output Pin Assignment

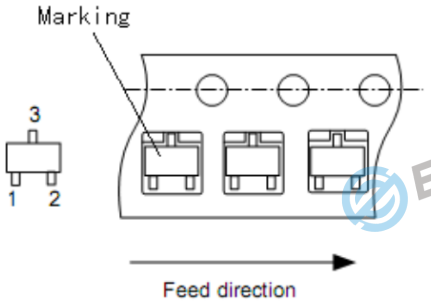
(Top view)

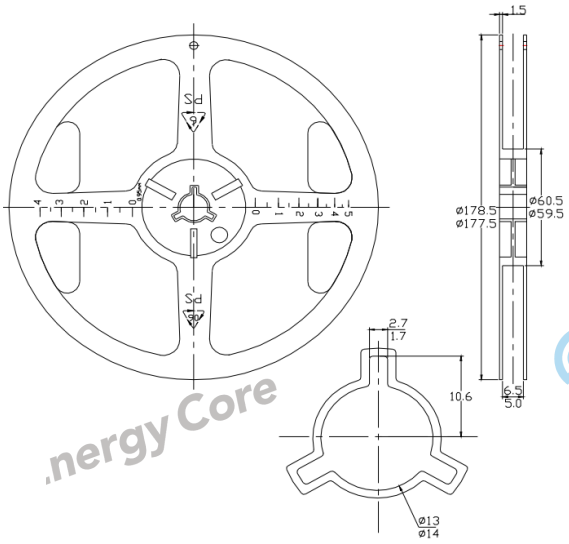


SOT23-3 Package Tape On Reel Dimension









NOTES:

1. Material: Conductive polystyrene;
2. DIM in mm;
3. 10 sprocket hole pitch cumulative tolerance ±0.2;
4. Camber not to exceed 1mm in 100mm;
5. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole;
6. (S.R. OHM/SQ) Means surface electric