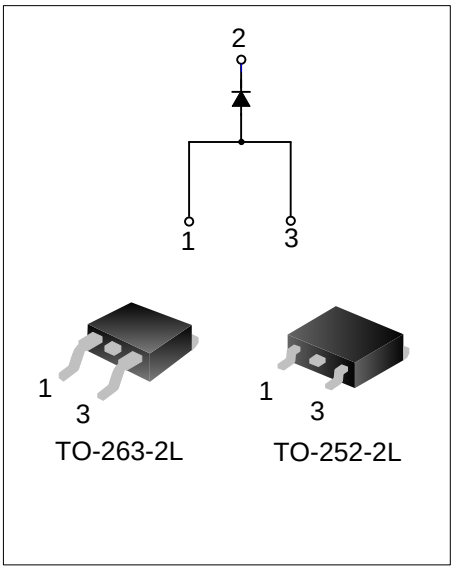
10A, 400V ULTRA-FAST RECOVERY RECTIFIER

GENERAL DESCRIPTION

SFR10S40AD/S is an Ultra-Fast Recovery Diode, fabricated in advanced silicon planar epitaxial process. The process parameter and the device structure are fine tuned with optimized performance of forward voltage drop and reverse recovery time.

Precise epitaxial doping control, advanced planar junction terminal structure and the platinum doping for life control, guarantee the best overall performance, ruggedness and reliability characteristics.

This device is intended for use in the output rectification stage of SMPS, UPS, and DC-DC converters, as well as used as free-wheeling diode in low voltage inverters and chopper motor drivers.



FEATURES

- Ultrafast 35 Nanosecond Recovery Time
- Low Forward Voltage Drop
- Low Reverse Leakage Current

NOMENCLATURE

S F R X X X X X X X

Silan Fast Recovery Diode Code

Nominal Forward Current:
2 Digits. Example:
08 denotes 8A
20 denotes 20A

Package Information:
1 or 2 alphanumeric characters, example:
D： TO-252-2L
S： TO-263-2L

Version

Nominal Reverse Voltage:
2 Digits, example:
20 denotes 200V，40 denotes 400V

Reverse Recovery Time: 1 letter；example:
U: Trr <20ns；S: Trr 20ns-35ns；
F: Trr >35ns

ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing
SFR10S40ADTR	TO-252-2L	10S40A	Halogen free	Tape&Reel
SFR10S40AS	TO-263-2L	10S40A	Halogen free	Tube
SFR10S40ASTR	TO-263-2L	10S40A	Halogen free	Tape&Reel

ABSOLUTE MAXIMUM RATINGS

Characteristics	Symbol	Rating	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	400	V
Average Rectified Forward Current	$I_{F(AV)}$	10	A
Forward Peak Surge Current(Note 1)	I_{FSM}	125	A
Operation Junction Temperature Range	T_J	-40~150	°C
Storage Temperature Range	T_{stg}	-40~150	°C

Note 1:Test Mode: Tested when pins 1 and 3 are connected in parallel.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.0	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test condition		Min.	Typ.	Max.	Unit
Reverse Breakdown Voltage	V_R	I_R=100μA, T_C=25°C		400	--	--	V
Maximum Forward Voltage	V_{FM}	I_F=10A	T_C=25°C	--	--	1.45	V
			T_C=125°C	--	--	1.30	V
Maximum Reverse Leakage Current	I_{RM}	Rated DC voltage	T_C=25°C	--	--	10	μA
			T_C=125°C	--	--	100	μA
Reverse Recovery Time	t_{rr}	I_F=0.5 A，I_R=1.0A，I_{REC}=0.25A		--	--	35	ns
Reverse Recovery Time	t_{rr}	I_F=10A, V_R=200V, T_C=25°C;		--	60	--	ns
Reverse Recovery Current	I_{RP}			--	4.2	--	A
Change Rate of Reverse Recovery Voltage	dv/dt			--	1.85	--	V/ns
Change Rate of Reverse Recovery Current	di/dt			--	200	--	A/μs

TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristics

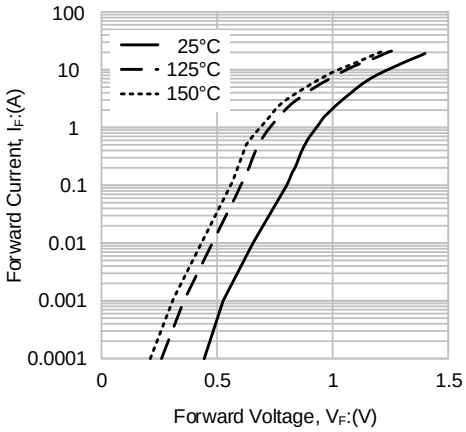


Figure 2. Junction Capacitance Characteristics

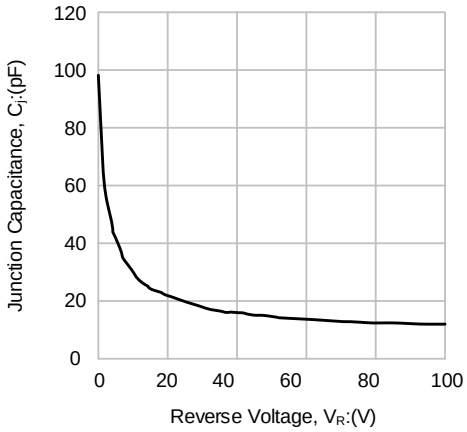


Figure 3. Reverse Characteristics

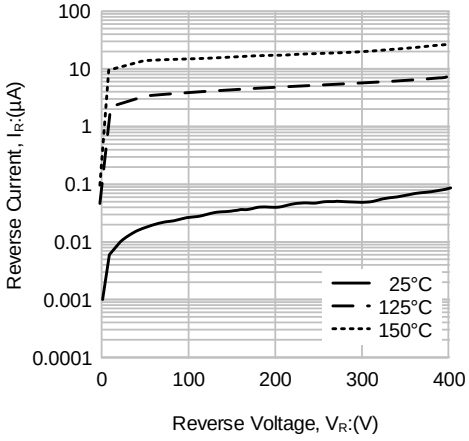


Figure 4. Power Dissipation (Per Leg)

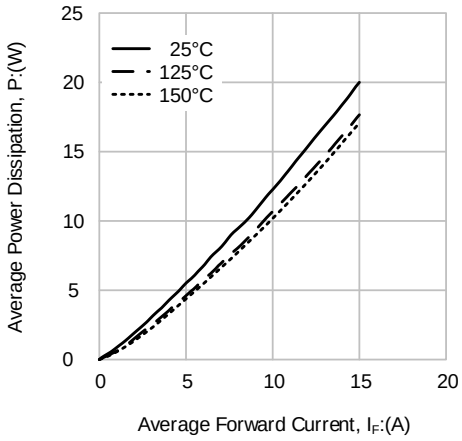
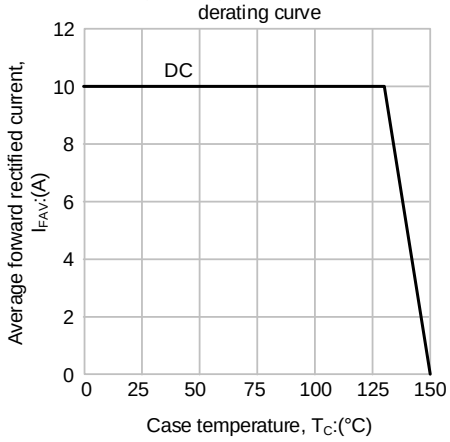


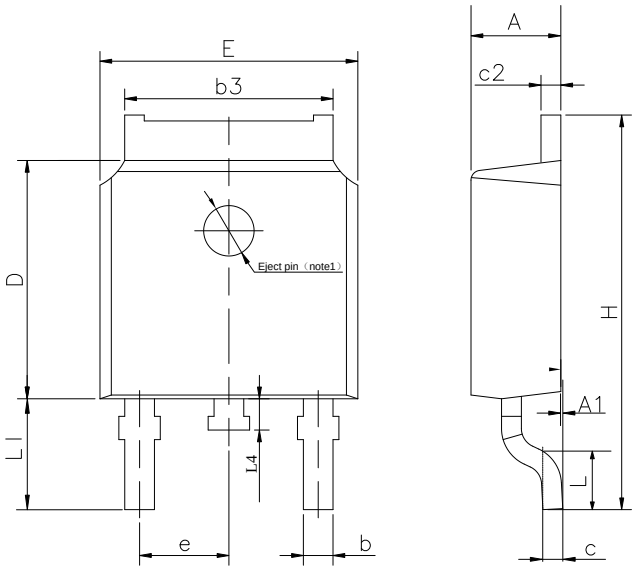
Figure5.Typical forward current derating curve



PACKAGE OUTLINE

TO-252-2L

UNIT: mm

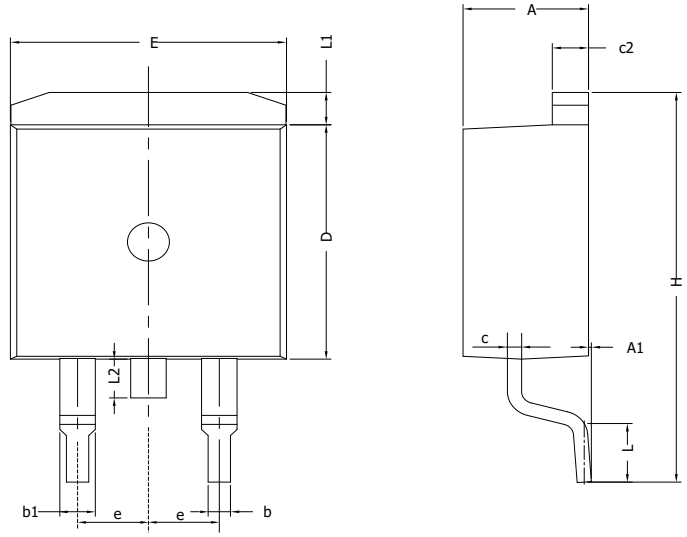


SYMBOL	MIN	NOM	MAX
A	2.10	2.30	2.50
A1	0	---	0.127
b	0.66	0.76	0.89
b3	5.10	5.33	5.46
c	0.45	---	0.65
c2	0.45	---	0.65
D	5.80	6.10	6.40
E	6.30	6.60	6.90
e	2.30TYP		
H	9.60	10.10	10.60
L	1.40	1.50	1.70
L1	2.90REF		
L4	0.60	0.80	1.00

NOTE1 : There are two conditions for this position:has an eject pin or has no eject pin.

TO-263-2L

UNIT: mm



SYMBOL	MIN	NOM	MAX
A	4.30	4.57	4.72
A1	0	0.10	0.25
b	0.71	0.81	0.91
c	0.30	---	0.60
c2	1.17	1.27	1.37
D	8.50	---	9.35
E	9.80	---	10.45
e	2.54BSC		
H	14.70	---	15.75
L	2.00	2.30	2.74
L1	1.12	1.27	1.42
L2	---	---	1.75

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Part No.:	SFR10S40AD/S	Document Type:	Datasheet
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Rev.: 1.5

Revision History:

1. Add Note 1 of IFSM

Rev.: 1.4

Revision History:

1. Modify Tc to 25℃

Rev.: 1.3

Revision History:

1. Modify the absolute maximum ratings
2. Modify the electrical characteristics

Rev.: 1.2

Revision History:

1. Modify the absolute maximum ratings of I_{FSM}

Rev.: 1.1

Revision History:

1. Add the figure 5

Rev.: 1.0

Revision History:

1. First release