FAIRCHILD SEMICONDUCTOR™

ISL9R2480G2

PRELIMINARY | Data Sheet | November 2000 | File Number 5005

24A, 800V Stealth™ Diode

The ISL9R2480G2 is a Stealth™ diode optimized for low loss performance in high frequency applications. The Stealth family exhibits low reverse recovery current (I_{RRM}) and exceptionally soft recovery under typical operating conditions.

This device is intended for use as a free wheeling or boost diode in power supplies and other power switching applications. The low I_{RRM} and short t_a phase reduce loss in switching transistors. The soft recovery minimizes ringing, expanding the range of conditions under which the diode may be operated without the use of additional snubber circuitry.

Formerly developmental type TA49392.

Ordering Information

PART NUMBER	PACKAGE	BRAND
ISL9R2480G2	TO-247	R2480G2

NOTE: When ordering, use the entire part number.

Symbol

Features

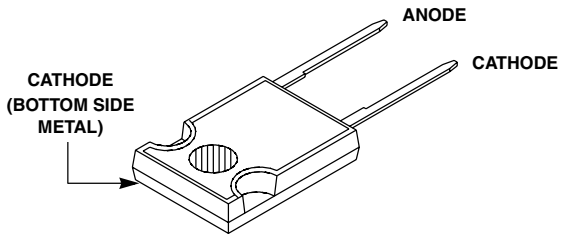
- Soft Recovery. . . . . $t_b / t_a > 1.2$
- Fast Recovery . . . . . $t_{rr} < 35ns$
- Operating Temperature . . . . . 175^oC
- Reverse Voltage 800V

Applications

- Switch Mode Power Supplies
- PFC Boost Diode
- UPS Free Wheeling Diode
- Motor Drive FWD
- SMPS FWD
- Snubber Diode

Packaging

JEDEC STYLE 2 LEAD TO-247



Absolute Maximum Ratings $T_C = 25^oC$, Unless Otherwise Specified

			UNITS
Peak Repetitive Reverse Voltage	V_{RRM}	800	V
Working Peak Reverse Voltage	V_{RWM}	800	V
DC Blocking Voltage	V_R	800	V
Average Rectified Forward Current	$I_{F(AV)}$	24	A
Repetitive Peak Surge Current (Square Wave, 20kHz)	I_{FRM}	48	A
Nonrepetitive Peak Surge Current (Halfwave 1 Phase 60Hz)	I_{FSM}	240	A
Maximum Power Dissipation	P_D	160	W
Operating and Storage Temperature	T_{STG}, T_J	-55 to 175	^oC

Electrical Specifications $T_C = 25^oC$, Unless Otherwise Specified

SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
BV	I_R = 1mA	800	-	-	V
V_F	I_F = 24A	-	2.5	3.0	V
	I_F = 24A, $T_C = 125^oC$	-	2.0	2.5	V
I_R	V_R = 600V	-	-	100	μA
	V_R = 600V, $T_C = 125^oC$	-	-	1.0	mA
t_{rr}	I_F = 1A, dI_F/dt = 100A/μs, V_R = 30V	-	27	35	ns
	I_F = 24A, dI_F/dt = 100A/μs, V_R = 30V	-	34	45	ns
t_{rr}	I_F = 24A, dI_F/dt = 200A/μs, V_R = 520V, $T_C = 25^oC$	-	35	-	ns
I_{RRM}		-	4.2	-	A
Q_{RR}		-	75	-	nC
t_{rr}	I_F = 24A, dI_F/dt = 200A/μs, V_R = 520V, $T_C = 125^oC$	-	145	-	ns
S		-	3.8	-	
I_{RRM}		-	5.0	-	A
Q_{RR}		-	500	-	nC
t_{rr}	I_F = 24A, dI_F/dt = 900A/μs, V_R = 520V, $T_C = 125^oC$	-	72	-	ns
S		-	1.96	-	
I_{RRM}		-	17.3	-	A
Q_{RR}		-	710	-	nC
dI_M/dt		-	600	-	A/μs
C_J	V_R = 10V, I_F = 0A	-	95	-	pF
$R_{\theta JC}$		-	-	0.92	$^oC/W$

DEFINITIONS

BV = Breakdown Voltage.

V_F = Instantaneous forward voltage (pw = 300μs, D = 2%).

I_R = Instantaneous reverse current.

t_{rr} = Reverse recovery time ($t_a + t_b$).

I_{RRM} = Maximum reverse recovery current.

Q_{RR} = Reverse recovery charge.

S = Softness factor (t_b / t_a).

dI_M/dt = Maximum di/dt during t_b.

C_J = Junction Capacitance.

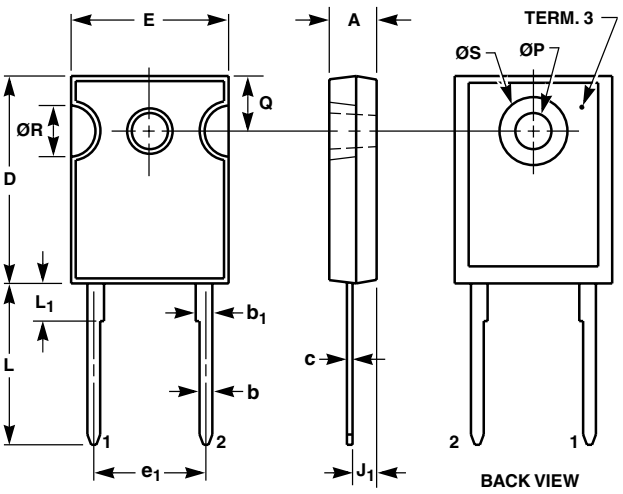
$R_{\theta JC}$ = Thermal resistance junction to case.

pw = pulse width.

D = Duty cycle

TO-247

2 LEAD JEDEC STYLE TO-247 PLASTIC PACKAGE (FOR RECTIFIERS ONLY)



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.180	0.190	4.58	4.82	-
b	0.046	0.051	1.17	1.29	2, 3
b_1	0.060	0.070	1.53	1.77	1, 2
c	0.020	0.026	0.51	0.66	1, 2, 3
D	0.800	0.820	20.32	20.82	-
E	0.605	0.625	15.37	15.87	-
e_1	0.438 BSC		11.12 BSC		4
J_1	0.090	0.105	2.29	2.66	5
L	0.620	0.640	15.75	16.25	-
L_1	0.145	0.155	3.69	3.93	1
ØP	0.138	0.144	3.51	3.65	-
Q	0.210	0.220	5.34	5.58	-
ØR	0.195	0.205	4.96	5.20	-
ØS	0.260	0.270	6.61	6.85	-

NOTES:

1. Lead dimension and finish uncontrolled in L_1.
2. Lead dimension (without solder).
3. Add typically 0.002 inches (0.05mm) for solder coating.
4. Position of lead to be measured 0.250 inches (6.35mm) from bottom of dimension D.
5. Position of lead to be measured 0.100 inches (2.54mm) from bottom of dimension D.
6. Controlling dimension: Inch.
7. Revision 2 dated 12-93.

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
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