

## Surface Mount Super Fast Recovery Rectifier

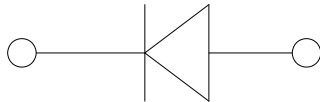


### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.



### Mechanical Data

- **Package:** DO-214AA (SMB)  
Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

### ■ Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	MURS120B	MURS140B	MURS160B
Device marking code			MURS120B	MURS140B	MURS160B
Maximum Repetitive Peak Reverse Voltage	VRRM	V	200	400	600
Maximum RMS Voltage	VRMS	V	140	280	420
Maximum DC blocking Voltage	VDC	V	200	400	600
Average rectified output current @60Hz sine wave, resistance load, TL (Fig.1)	IO	A	1.0		
Forward Surge Current (Non-repetitive) @60Hz Half-sine wave, 1 cycle, Tj=25°C	IFSM	A	30		
Forward Surge Current (Non-repetitive) @1ms, square wave, 1 cycle, Tj=25°C			60		
Current squared time @1ms≤t≤8.3ms Tj=25°C	I²t	A²s	3.735		
Storage temperature	Tstg	°C	-55 ~ +150		
Junction temperature	Tj	°C	-55 ~ +150		

# MURS120B THRU MURS160B

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	MURS120B	MURS140B	MURS160B
Maximum instantaneous forward voltage	V <sub>F</sub>	V	I <sub>FM</sub> =1.0A	0.92	1.25	
Maximum reverse recovery time	t <sub>rr</sub>	ns	I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>rr</sub> =0.25A	25	50	
Maximum DC reverse current at rated DC blocking voltage	I <sub>R</sub>	μA	T <sub>j</sub> =25°C	5.0		
			T <sub>j</sub> =125°C	50		
Typical junction capacitance	C <sub>j</sub>	pF	Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C	17	15	14

## ■Dynamic Characteristics

### ◆ MURS120B

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T <sub>RR</sub>	ns	T <sub>j</sub> =25°C	I <sub>F</sub> =1A, di/dt=-50A/us V <sub>RM</sub> =30V	-	26	-
			T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =100V	-	18	-
			T <sub>j</sub> =125°C		-	23	-
Peak recovery current	I <sub>RRM</sub>	A	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =100V	-	2.3	-
			T <sub>j</sub> =125°C		-	3.8	-
Reverse recovery charge	Q <sub>rr</sub>	nC	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =100V	-	20.2	-
			T <sub>j</sub> =125°C		-	43.7	-
Non-repetitive avalanche energy	E <sub>AS</sub>	mJ	T <sub>j</sub> =25°C	I <sub>R</sub> =1.5 A, L=15 mH	16.9	-	-

### ◆ MURS140B

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T <sub>RR</sub>	ns	T <sub>j</sub> =25°C	I <sub>F</sub> =1A, di/dt=-50A/us V <sub>RM</sub> =30V	-	26	-
			T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =200V	-	22	-
			T <sub>j</sub> =125°C		-	31	-
Peak recovery current	I <sub>RRM</sub>	A	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =200V	-	1.9	-
			T <sub>j</sub> =125°C		-	3.5	-
Reverse recovery charge	Q <sub>rr</sub>	nC	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =200V	-	21.1	-
			T <sub>j</sub> =125°C		-	54.9	-
Non-repetitive avalanche energy	E <sub>AS</sub>	mJ	T <sub>j</sub> =25°C	I <sub>R</sub> =0.4A, L=15 mH	1.2	-	-

### ◆ MURS160B

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS		Min	Typ	Max
Reverse Recovery Time	T <sub>RR</sub>	ns	T <sub>j</sub> =25°C	I <sub>F</sub> =1A, di/dt=-50A/us V <sub>RM</sub> =30V	-	49	-
			T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =400V	-	38	-
			T <sub>j</sub> =125°C		-	59	-
Peak recovery current	I <sub>RRM</sub>	A	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =400V	-	3.5	-
			T <sub>j</sub> =125°C		-	5.5	-
Reverse recovery charge	Q <sub>rr</sub>	nC	T <sub>j</sub> =25°C	I <sub>F</sub> =1A di/dt=-200A/us V <sub>RM</sub> =400V	-	67.4	-
			T <sub>j</sub> =125°C		-	160.5	-
Non-repetitive avalanche energy	E <sub>AS</sub>	mJ	T <sub>j</sub> =25°C	I <sub>R</sub> =0.5A, L=15 mH	1.9	-	-

# MURS120B THRU MURS160B

## ■ Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	MURS120B	MURS140B	MURS160B
Typical Thermal resistance	R $\theta$ J-A <sup>(1)</sup>	°C/W	65		
	R $\theta$ J-L <sup>(1)</sup>		20		
	R $\theta$ J-C <sup>(1)</sup>		18		

Note:  
 (1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad areas

## ■ Characteristics (Typical)

FIG.1: I<sub>o</sub>-T<sub>L</sub> Curve

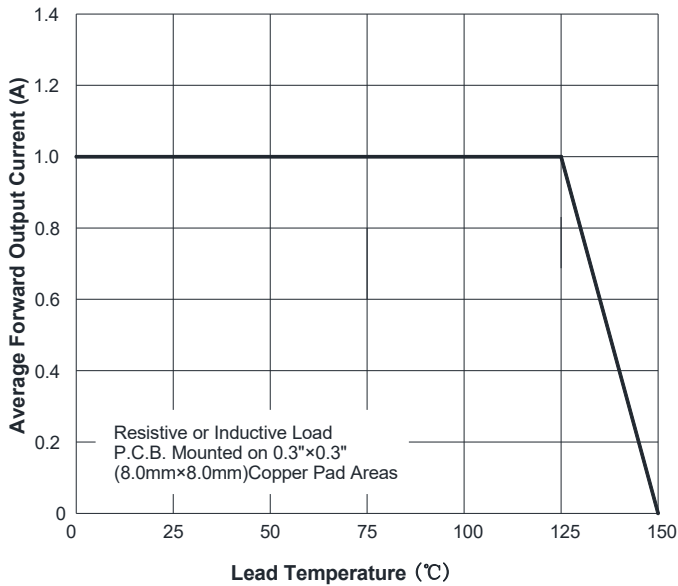


FIG.2: Forward Surge Current Capacity

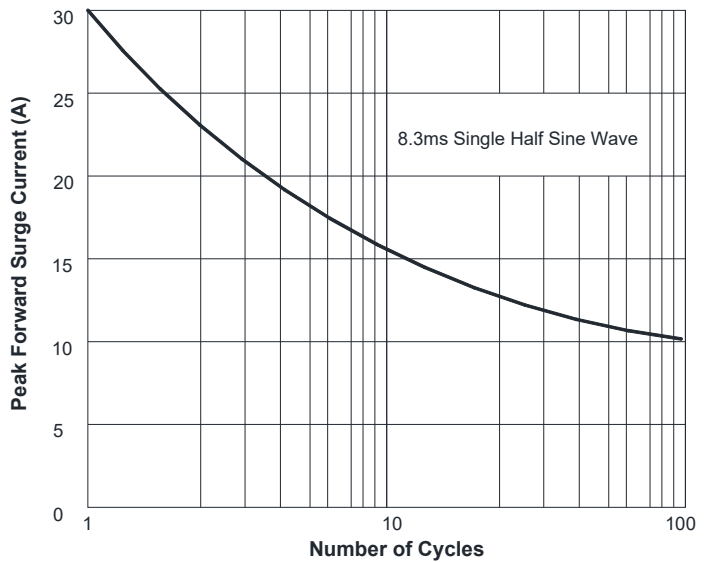


FIG.3: Typical Forward Voltage

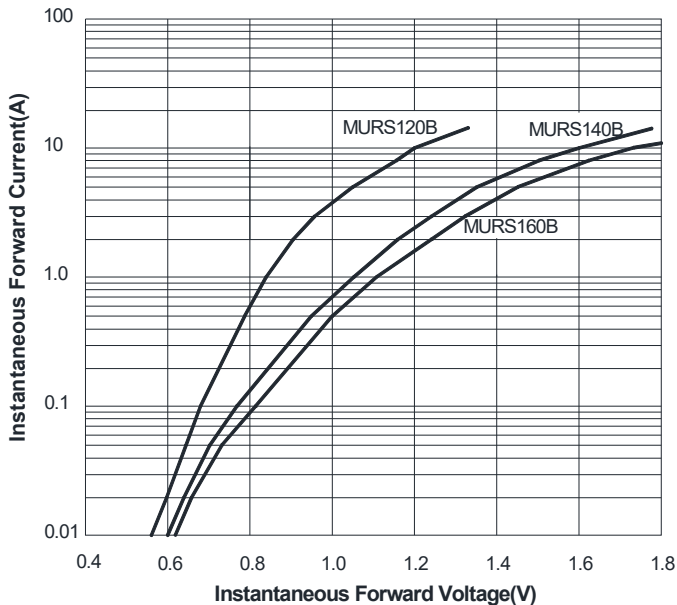
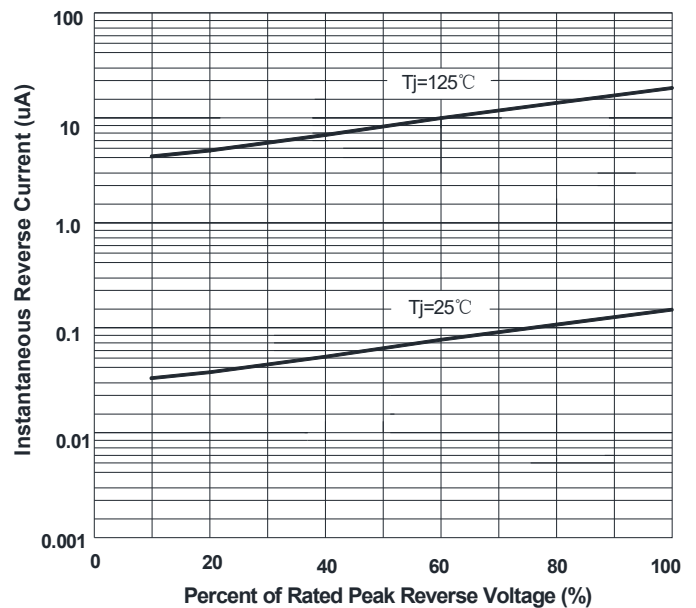
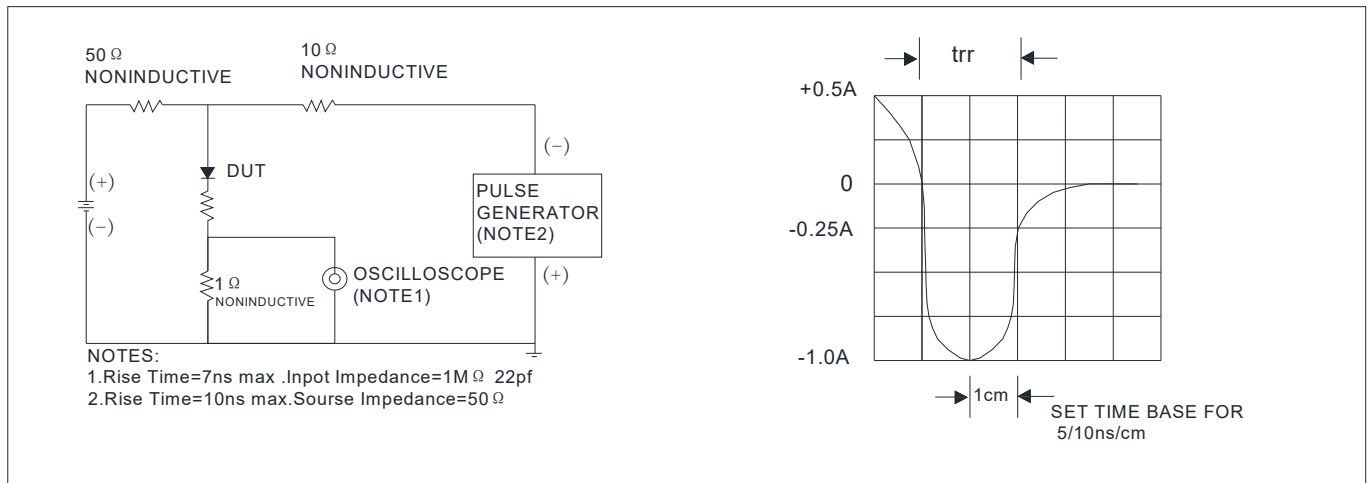


FIG.4: Typical Reverse Characteristics



# MURS120B THRU MURS160B

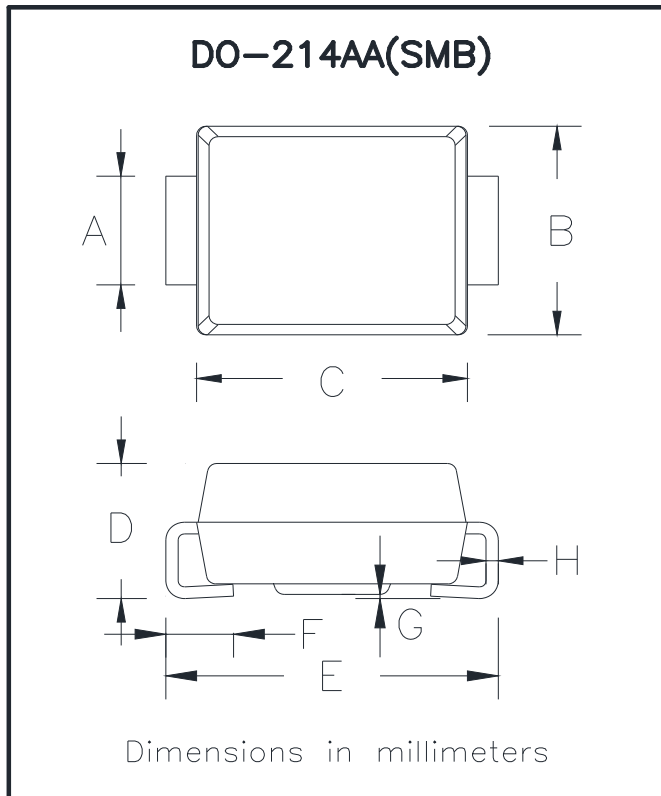
FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



## Ordering Information (Example)

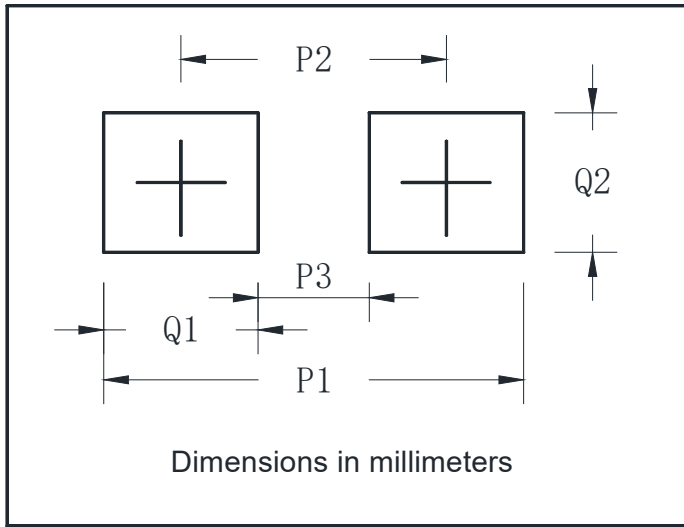
PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
MURS120B-MURS160B	F1	Approximate 0.096	3000	/	48000	13" reel
MURS120B-MURS160B	F2	Approximate 0.096	750	6000	24000	7" reel
MURS120B-MURS160B	F3	Approximate 0.096	500	4000	16000	7" reel

## Outline Dimensions



DO-214AA(SMB)		
Dim	Min	Max
A	1.85	2.15
B	3.30	3.94
C	4.05	4.75
D	1.99	2.61
E	5.21	5.59
F	0.90	1.41
G	0.05	0.20
H	0.15	0.31

■ Suggested pad layout



DO-214AA(SMB)	
Dim	Millimeters
P1	6.8
P2	4.3
P3	1.8
Q1	2.5
Q2	2.3

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