



DISCRETE POWER DIODES and THYRISTORS
DATA BOOK



SD263C..S50L SERIES

FAST RECOVERY DIODES

Hockey Puk Version

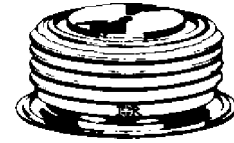
Features

- High power FAST recovery diode series
- 4.5 μ s recovery time
- High voltage ratings up to 4500V
- High current capability
- Optimized turn on and turn off characteristics
- Low forward recovery
- Fast and soft reverse recovery
- Press-puk encapsulation
- Case style conform to JEDEC DO-200AB (B-PUK)
- Maximum junction temperature 125°C

375A

Typical Applications

- Snubber diode for GTO
- High voltage free-wheeling diode
- Fast recovery rectifier applications



case style DO-200AB (B-PUK)

Major Ratings and Characteristics

Parameters	SD263C..S50L	Units
$I_{F(AV)}$	375	A
@ T_{hs}	55	°C
$I_{F(RMS)}$	408	A
I_{FSM} @ 50Hz	5500	A
@ 60Hz	5760	A
V_{RRM} range	3000 to 4500	V
t_{rr}	4.5	μ s
@ T_J	125	°C
T_J	- 40 to 125	°C

SD263C..S50L Series

ELECTRICAL SPECIFICATIONS

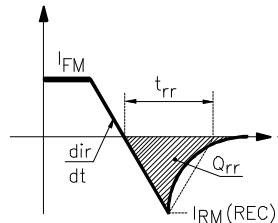
Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ $T_J = T_J$ max. mA
SD263C..S50L	30	3000	3100	50
	36	3600	3700	
	40	4000	4100	
	45	4500	4600	

Forward Conduction

Parameter		SD263C..S50L	Units	Conditions		
I _{F(AV)}	Max. average forward current @ Heatsink temperature	375 (150)	A	180° conduction, half sine wave		
		55 (85)	°C	Double side (single side) cooled		
I _{F(RMS)}	Max. RMS forward current	725	A	@ 25°C heatsink temperature double side cooled		
I _{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	5500	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.
		5760		t = 8.3ms	reapplied	
		4630		t = 10ms	50% V _{RRM}	
		4850		t = 8.3ms	reapplied	
I ² t	Maximum I ² t for fusing	151	KA ² s	t = 10ms	No voltage	
		138		t = 8.3ms	reapplied	
		107		t = 10ms	50% V _{RRM}	
		98		t = 8.3ms	reapplied	
I ² √t	Maximum I ² √t for fusing	1510	KA ² √s	t = 0.1 to 10ms, no voltage reapplied		
V _{F(TO)1}	Low level value of threshold voltage	1.56	V	(16.7% × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J max.		
V _{F(TO)2}	High level value of threshold voltage	1.71		(I > π × I _{F(AV)}), T _J = T _J max.		
r _{f1}	Low level value of forward slope resistance	1.64	mΩ	(16.7% × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J max.		
r _{f2}	High level value of forward slope resistance	1.53		(I > π × I _{F(AV)}), T _J = T _J max.		
V _{FM}	Max. forward voltage drop	3.20	V	I _{pk} = 1000A, T _J = T _J max, t _p = 10ms sinusoidal wave		

Recovery Characteristics

Code	$T_J = 25^{\circ}\text{C}$	Test conditions			Max. values @ $T_J = 125^{\circ}\text{C}$			
	typical t_{rr} @ 25% I_{RRM} (μs)	I_{pk} Square Pulse (A)	di/dt (*) (A/ μs)	V_r (V)	t_{rr} @ 25% I_{RRM} (μs)	Q_{rr} (μC)	I_{rr} (A)	
S50	5.0	1000	100	-50	4.5	680	240	

(*) $di/dt = 25A/\mu s$ @ $T_J = 25^\circ\text{C}$

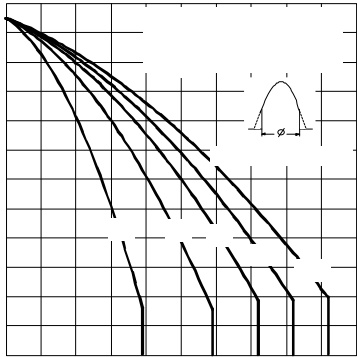


Fig. 3 - Current Ratings Characteristics

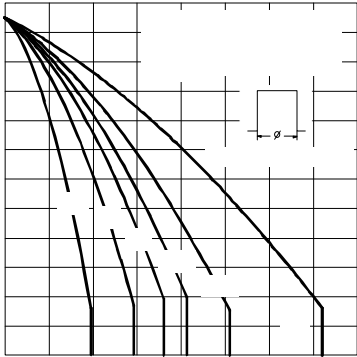


Fig. 4 - Current Ratings Characteristics

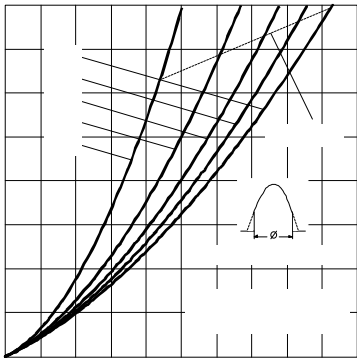


Fig. 5 - Forward Power Loss Characteristics

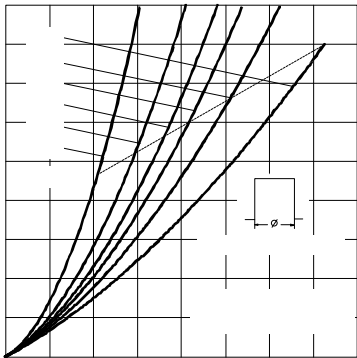


Fig. 6 - Forward Power Loss Characteristics

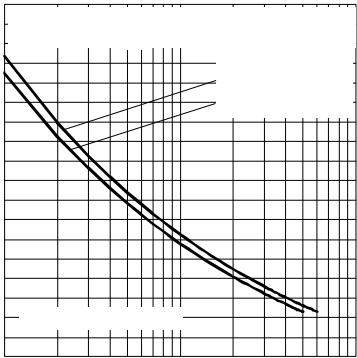


Fig. 7 - Maximum Non-repetitive Surge Current
Single and Double Side Cooled

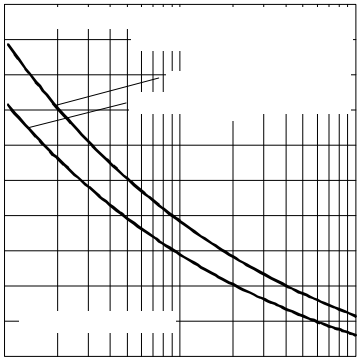


Fig. 8 - Maximum Non-repetitive Surge Current
Single and Double Side Cooled



Fig. 9 - Forward Voltage Drop Characteristics

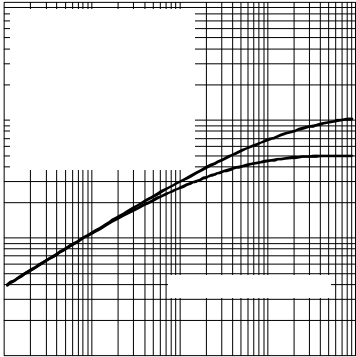


Fig. 10 - Thermal Impedance Z_{thJ-hs} Characteristic

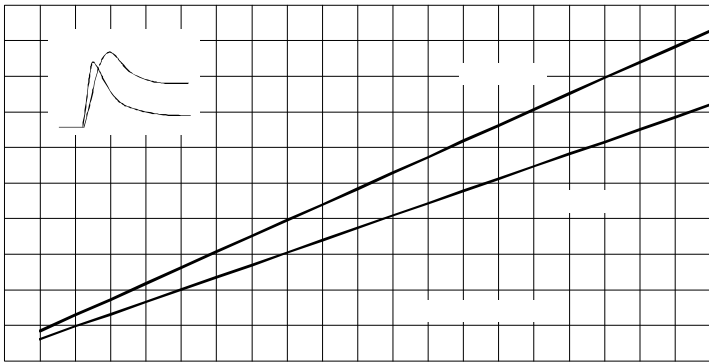


Fig. 11 - Typical Forward Recovery Characteristics

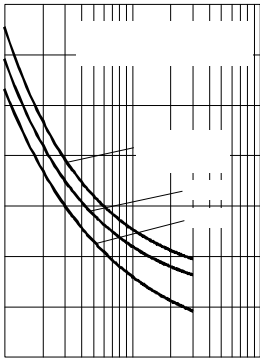


Fig. 12 - Recovery Time Characteristics

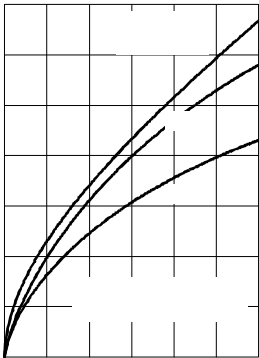


Fig. 13 - Recovery Charge Characteristics

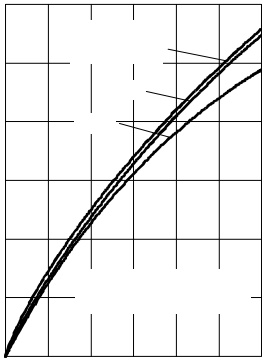


Fig. 14 - Recovery Current Characteristics

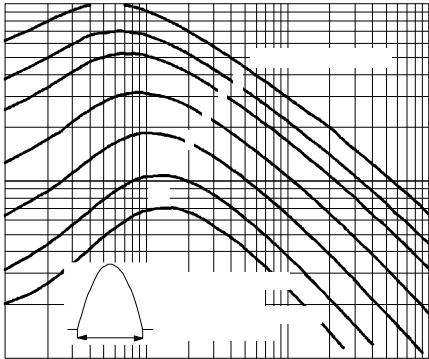


Fig. 15 - Maximum Total Energy Loss Per Pulse Characteristics

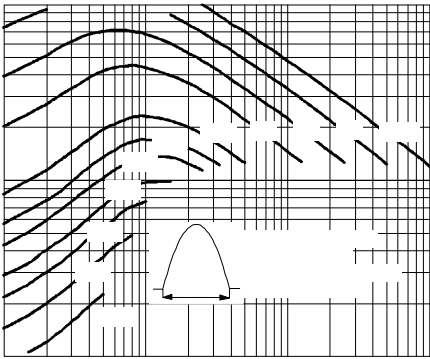


Fig. 16 - Frequency Characteristics

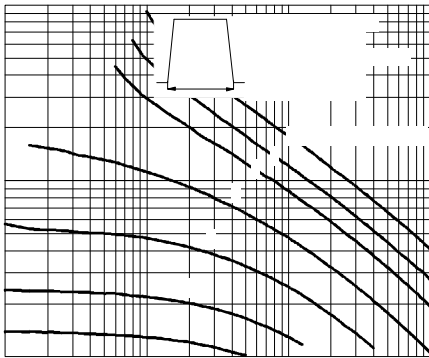


Fig. 17 - Maximum Total Energy Loss Per Pulse Characteristics

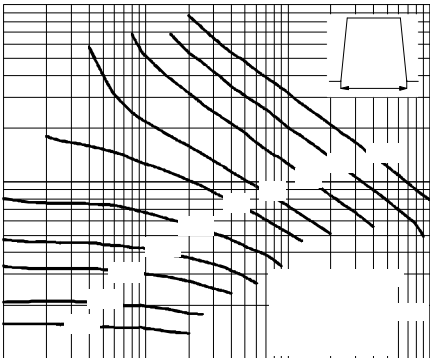


Fig. 18 - Frequency Characteristics

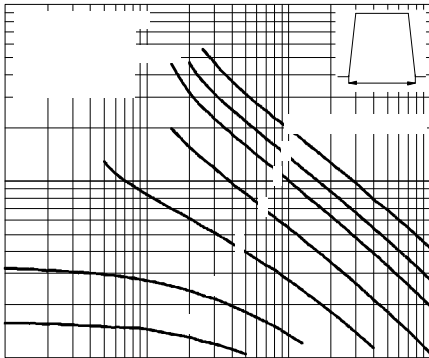


Fig. 19 - Maximum Total Energy Loss Per Pulse Characteristics

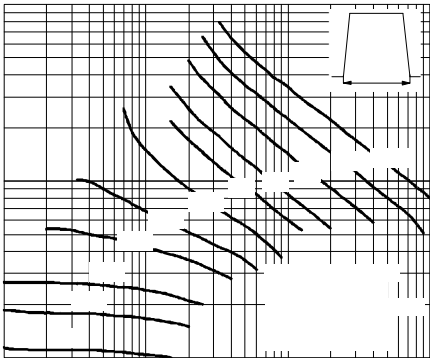


Fig. 20 - Frequency Characteristics

Thermal and Mechanical Specifications

Parameter	SD263C..S50L	Units	Conditions
T_J Max. junction operating temperature range	-40 to 125	°C	
T_{stg} Max. storage temperature range	-40 to 150		
R_{thJ-hs} Max. thermal resistance, junction to heatsink	0.11 0.05	K/W	DC operation single side cooled DC operation double side cooled
F Mounting force, $\pm 10\%$	9800 (1000)	N (Kg)	
wt Approximate weight	230	g	
Case style	DO-200AB (B-PUK)		See outline table

 ΔR_{thJ-hs} Conduction

(The following table shows the increment of thermal resistance R_{thJ-hs} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction		Rectangular conduction		Units	Conditions
	Single Side	Double Side	Single Side	Double Side		
180°	0.012	0.011	0.008	0.008	K/W	$T_J = T_J \text{ max.}$
120°	0.014	0.015	0.014	0.014		
90°	0.018	0.018	0.019	0.019		
60°	0.026	0.027	0.027	0.028		
30°	0.045	0.046	0.046	0.046		

Ordering Information Table

Device Code

SD	26	3	C	45	S50	L
1	2	3	4	5	6	7

- 1** - Diode
- 2** - Essential part number
- 3** - 3 = Fast recovery
- 4** - C = Ceramic Puk
- 5** - Voltage code: Code x 100 = V_{RRM} (See Voltage Ratings table)
- 6** - t_{rr} code
- 7** - L = Puk Case DO-200AB (B-PUK)

SD263C..S50L Series

Outline Table

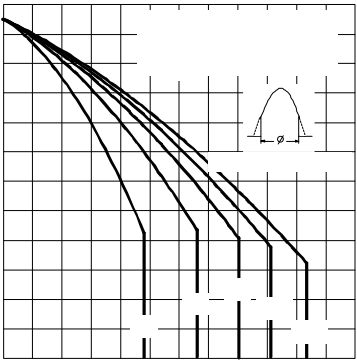
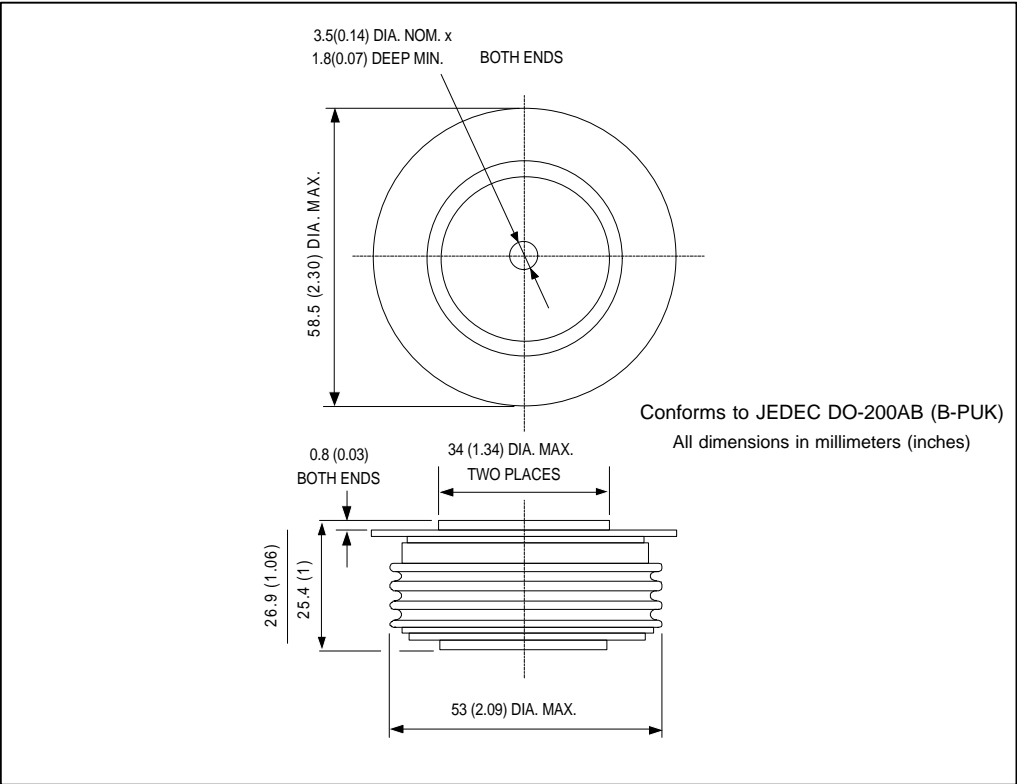


Fig. 1 - Current Ratings Characteristics

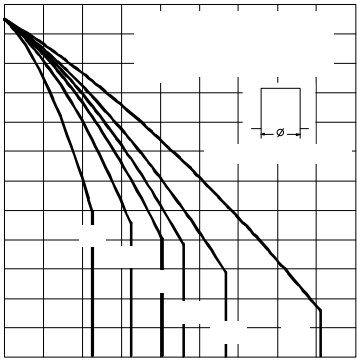


Fig. 2 - Current Ratings Characteristics