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40CDQ & 60CDQ SERIES AND SD241

40 and 60 Amp Dual Schottky Center Tap Rectifiers

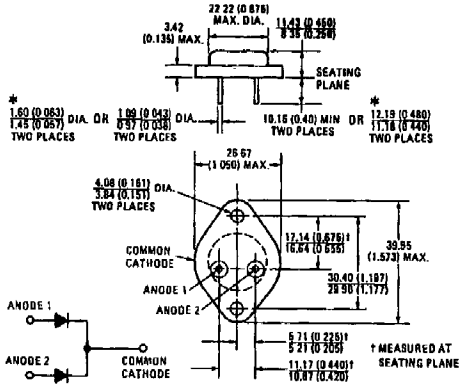
Major Ratings and Characteristics

Characteristics		40CDQ	SD241	60CDQ	Units
I_O	Rectangular Waveform	40	60	60	A
	Sinusoidal Waveform	36	54	54	
I_{FSM}	@ 50 Hz	380		475	A
	@ 60 Hz	400		500	
I^2t	@ 50 Hz	730		1140	A^2s
	@ 60 Hz	665		1040	
$I^2\sqrt{t}$		10,325		16,130	$A^2\sqrt{s}$
V_{RWM}		20 - 45	35	20 - 45	V
C_t @ −5V		1400			pF
T_J		-55 to 175			°C

Description/Features

The 40CDQ and 60CDQ Dual Schottky Rectifier Series and SD241 employ the "830" process which results in a very low ratio of reverse leakage current to junction temperature. In addition to offering improvements in reliability and performance, they are rugged devices with a guaranteed repetitive peak reverse voltage capability, and excellent ability to withstand reverse energy transients. They can be used in both existing and new designs.

- 175°C T_J operation
- 100% reverse energy tested (each junction)
- 400A and 500A surge, 60 Hz, one cycle (per junction)
- Extremely low reverse leakage: 10 mA @ 25°C
- No voltage derating of V_{RWM} over temperature range
- A guaranteed repetitive peak reverse voltage capability for short pulses which is 20% above V_{RWM}
- High power supply reliability
- Minimizes problem of thermal runaway
- TO-204AE (Modified TO-3) Case Style available (60CDQ series)
- Can be supplied to meet stringent military, aerospace and other high-reliability requirements.



Conforms to JEDEC Outline TO-204AA (TO-3)
***Conforms to JEDEC Outline TO-204AE (Modified TO-3)**
All Dimensions in Millimeters and (Inches)

VOLTAGE RATINGS PER JUNCTION

Part Numbers			V_{RWM} – Max. Working Peak Reverse Voltage (V) ①	V_{RRM} – Max. Repetitive Peak Reverse Voltage (V) ① (t_p = 200 ns Max.)	V_R – Max. Direct Reverse Voltage (V) ④
40CDQ020	–	60CDQ020	20	24	20
40CDQ030	–	60CDQ030	30	36	30
40CDQ035	SD241	60CDQ035	35 ⑤	42 ⑤	35
40CDQ040	–	60CDQ040	40	48	40
40CDQ045	–	60CDQ045	45	54	45

ELECTRICAL SPECIFICATIONS

		40CDQ	SD241	60CDQ	Units	Conditions
I_O	Max. average output current from center tap circuit	40	60	60	A	180° conduction, rectangular waveform, T_C = –40 to 143°C for 40CDQ, T_C = –40 to 120°C for 60CDQ.
		36	54	54	A	180° conduction, sinusoidal waveform, T_C = –40 to 141°C for 40CDQ, T_C = –40 to 116°C for 60CDQ.
I_{FSM}	Max. peak one cycle, non-repetitive surge current, per junction	380		475	A	50 Hz half cycle sine wave or 8 ms rectangular pulse, Following any rated load condition and with rated V_{RWM} applied.
		400		500	A	60 Hz half cycle sine wave or 5 ms rectangular pulse,
		455		570	A	50 Hz With V_{RWM} = 0 following surge,
		475		595	A	60 Hz initial T_J = 175°C.
I^2t	Max. I^2t for fusing, per junction	730		1140	A^2s	t = 10 ms. Rated V_{RWM} following surge,
		665		1040	A^2s	t = 8.3 ms. initial T_J = 175°C.
I^2t	Max. I^2t for individual junction fusing, per junction	1030		1610	A^2s	t = 10 ms. V_{RWM} following surge = 0,
		940		1470	A^2s	t = 8.3 ms. initial T_J = 175°C.
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual ④ junction fusing, per junction	10,325		16,130	$A^2\sqrt{s}$	t = 0.1 to 10 ms, T_J = 175°C, V_{RWM} = 0 following surge.
V_{FM}	Max. peak forward voltage per junction	0.70		0.82	V	T_J = 25°C I_{FM} = 20A peak for 40CDQ, I_{FM} = 30A peak for 60CDQ and SD241 180° rectangular wave.
		0.91		1.09	V	T_J = 25°C Rated $I_{F(AV)}$ (40A peak for 40CDQ, 60A peak for 60CDQ and SD241) 180° rectangular wave,
		0.74		0.92	V	T_J = 175°C
I_{RM}	Max. peak reverse current, per junction	10			mA	T_J = 25°C V_{RM} = rated V_{RWM}
		20			mA	T_J = 125°C
I_{RRM}	Max. repetitive peak reverse current	2.0			A	T_C = 25°C, t_p = 2 µs rectangular pulse, f = 1 kHz. ⑦ see fig. 11 for test circuit.
C_t	Max. capacitance, per junction	1400			pF	T_C = 25°C, V_R = 5 Vdc (Test signal in the range of 100 kHz to 1 MHz)
dv/dt	Max. rate of application of reverse voltage, per junction	1000			V/µs	T_C = 25°C, V_{RM} = rated V_{RWM}

THERMAL-MECHANICAL SPECIFICATIONS

T_J	Max. operating junction temperature range	–55 to 175		°C	
T_{stg}	Max. storage temperature range	–55 to 175		°C	
R_{thJC}	Max. thermal resistance, junction-to-case, DC operation	1.4		deg. C/W	Based on power dissipated in one junction, both junctions operating.
	Max. composite thermal resistance, junction-to-case, DC operation	0.7		deg. C/W	Based on power dissipated in both junctions.
R_{thCS}	Thermal resistance, case-to-sink	0.2		deg. C/W	Mounting surface flat, smooth and greased.
wt	Approximate weight	12.8 (0.45)		g (oz.)	
	Case Style	TO-204AA (TO-3)	TO-204AE (Modified TO-3)		Terminals 1 and 2: Anodes 1 and 2 Case: Common Cathodes

② T_C = –55 to 172°C, 180° conduction

③ T_C = 0 to 172°C, 180° conduction

④ T_C = –55 to 162°C.

⑤ For SD241 rated V_{RWM} and V_{RRM} = 45V @ T_J = 25°C, = 35V @ T_J = 150°C

⑥ I^2t for time $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$.

⑦ For test circuit refer to Fig. 11.