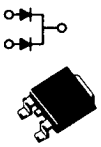
Schottky Rectifiers

SWITCHMODE™ Schottky power rectifiers with the high speed and low forward voltage drop characteristic of Schottky's metal/silicon junctions are produced with ruggedness and temperature performance comparable to silicon-junction rectifiers. Ideal for use in low-voltage, high-frequency power supplies, and as very fast clamping diodes, these devices feature switching times less than 10 ns, and are offered in current ranges from 1 to 600 amperes, and reverse voltages to 200 volts.

In some current ranges, devices are available with junction temperature specifications of 125°C, 150°C, 175°C. Devices with higher T_J ratings can have significantly lower leakage currents, but higher forward-voltage specifications. These parameter tradeoffs should be considered when selecting devices for applications that can be satisfied by more than one device type number.

All devices are connected cathode-to-case or cathode-to-heatsink, where applicable. Reverse polarity may be available on some devices upon special request. Contact your Motorola representative for more information.

Table 4 — Schottky Rectifiers

	I_O, AVERAGE RECTIFIED FORWARD CURRENT (Amperes)(1)							
	1		3				5	6
V_{RRM} (Volts)	59-04 Plastic Cathode = Polarity Band 	403A-03 SMB Cathode = Notch 	267-03 Plastic Cathode = Polarity Band 	403-03 SMC Cathode = Notch 	369A-11 DPAK Style 3 	60-01 Metal Style 1 	369A-11 DPAK Style 3 	
20	1N5817		1N5820	MBR320		MBRD320	1N5823	MBRD620CT
25								
30	1N5818		1N5821	MBR330		MBRD330	1N5824	MBRD630CT
35								
40	***1N5819***	***MBRS140T3***	***1N5822***	***MBR340***	***MBRS340T3***	***MBRD340***	***1N5825***	***MBRD640CT***
45								
50	MBR150			MBR350		MBRD350		MBRD650CT
60	***MBR160***			***MBR360***		***MBRD360***		***MBRD660CT***
70	MBR170			MBR370				
80	MBR180			MBR380				
90	MBR190			MBR390				
100	***MBR1100***	***MBRS1100T3***		***MBR3100***				
I_{FSM} (Amperes)	25	40	80	80	80	75	500	75
Max V_F @ $I_{FM} = I_O$	0.6(2) T_L = 25°C	0.6(2) T_C = 25°C	0.525(2) T_L = 25°C	0.74(2) T_L = 25°C	0.525(2) T_L = 25°C	0.45 T_C = 125°C	0.38(2) T_C = 25°C	0.85 T_C = 125°C
T_J (Max) °C	125	125	125	150	125	150	125	150

(1) I_O is total device output current.
(2) Values are for 40 volt units, lower voltage parts exhibit lower V_F.

Devices listed in bold, italic are Motorola preferred devices.

SCHOTTKY RECTIFIERS (continued)

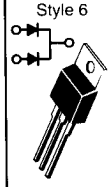
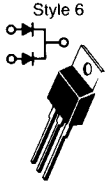
There are many other standard features in Motorola Schottky rectifiers that give added performance and reliability.

1. GUARDRINGS are included in all Schottky die for reverse voltage stress protection from high rates of dv/dt to virtually eliminate the need for snubber networks. The guardring also operates like a zener and avalanches when subjected to voltage transients.

2. MOLYBDENUM DISCS on both sides of the die minimize fatigue from power cycling in all metal products. The plastic TO-220 devices have a special solder formulation for the same purpose.

3. QUALITY CONTROL monitors all critical fabrication operations and performs selected stress tests to assure constant processes.

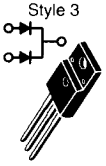
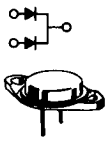
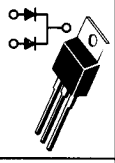
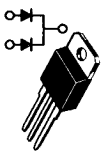
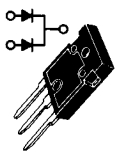
Table 4 — Schottky Rectifiers (continued)

	I_O, AVERAGE RECTIFIED FORWARD CURRENT (Amperes)(1)							
	7.5	10	15		16	20	25	
	221B-02 (TO-220AC) Style 1 		221A-06 (TO-220AB) Style 6 	56-03 (DO-203AA) Style 2 	221B-02 (TO-220AC) Style 1 	221A-06 (TO-220AB) Style 6 	56-03 (DO-203AA) Style 2 	
V_{RRM} (Volts)								
15						MBR2015CTL		
20				1N5826			1N5829	
30				1N5827		***MBR2030CTL***	1N5830	1N6095
35	MBR735	MBR1035	MBR1535CT		MBR1635	MBR2035CT ***MBR2535CTL***		
40				***1N5828***			***1N5831***	***1N6096***
45	***MBR745***	***MBR1045***	***MBR1545CT***		***MBR1645***	***MBR2045CT***		***SD41***
50								
60		***MBR1060***				***MBR2060CT***		
70		MBR1070				MBR2070CT		
80		MBR1080				MBR2080CT		
90		MBR1090				MBR2090CT		
100		***MBR10100***				***MBR20100CT***		
200						***MBR20200CT***		
I_{FSM} (Amperes)	150	150	150	500	150	150	800	400
Max V_F @ $I_{FM} = I_O$	0.57 T_C = 125°C	0.57 T_C = 125°C	0.72 T_C = 125°C	0.5 T_C = 125°C	0.57 T_C = 125°C	0.72(2) T_C = 125°C	0.48(2) T_C = 25°C	0.86 @ 78.5 A T_C = 70°C
T_J (Max) °C	150	150	150	150	150	150	125	150

(1) I_O is total device output current.
(2) Values are for 40 volt units, lower voltage parts exhibit lower V_F.

Devices listed in bold, italic are Motorola preferred devices.

Table 4 — Schottky Rectifiers (continued)

	I_O, AVERAGE RECTIFIED FORWARD CURRENT (Amperes)(1)							
	25	30					35	40
V_{RRM} (Volts)	221D-02 ISOLATED TO-220 Style 3 	11-03 (TO-204AA) Style 4 	221A-06 (TO-220AB) Style 6 	340E-01 (TO-218) Style 1 	340D-01 (TO-218AC) Style 2 	340F-03 (TO-247) Style 2 	56-03 (DO-203AA) Style 2 	257-01 (DO-203AB) Style 2 
15								
20		MBR3020CT					MBR3520	1N5832
25								
30								1N5833
35	MBRF2535CT	MBR3035CT	MBR2535CT		MBR3035PT	MBR3035WT	MBR3535	
40								***1N5834***
45	***MBRF2545CT***	***MBR3045CT SD241***	***MBR2545CT***	***MBR3045***	***MBR3045PT***	***MBR3045WT***	***MBR3545***	
50								
60								
70								
80								
90								
100								
I_{FSM} (Amperes)	150	400	300	300	400	350	600	800
Max V_F @ $I_{FM} = I_O$	0.62 @ 12.5 A T_C = 125°C	0.72 T_C = 125°C	0.73 T_C = 125°C	0.62 T_C = 100°C	0.72 T_C = 125°C	0.72 T_C = 125°C	0.55 T_C = 25°C	0.59 T_C = 25°C
T_J (Max) °C	150	150	150	150	150	150	150	125

(1) I_O is total device output current.

Devices listed in bold, italic are Motorola preferred devices.

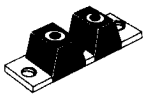
Table 4 — Schottky Rectifiers (continued)

V_{RRM} (Volts)	I_O, AVERAGE RECTIFIED FORWARD CURRENT (Amperes)(1)						
	50		60		65	75	80
	257-01 (DO-203AB) Style 2 	340E-01 (TO-218) Style 1 	257-01 (DO-203AB) Style 2 				
15				MBR6015L			
20				MBR6020L			
25		***MBR5025L***		MBR6025L			
30	1N6097			***MBR6030L***			
35			MBR6035		MBR6535	MBR7535	MBR8035
40	***1N6098***						
45	***SD51***		***MBR6045***		***MBR6545***	***MBR7545***	***MBR8045***
50							
60							
70							
80							
90							
100							
I_{FSM} (Amperes)	800	500	800	1000	800	1000	1000
Max V_F @ $I_{FM} = I_O$	0.86 @ 157 A T_C = 70°C	0.65(2) T_C = 150°C	0.6(2) T_C = 125°C	0.38 T_C = 150°C	0.62 T_C = 150°C	0.6(2) T_C = 125°C	0.59 T_C = 150°C
T_J (Max) °C	125	150	150	150	175	150	175

(1) I_O is total device output current.
(2) Values are for 40 volt units, lower voltage parts exhibit lower V_F.

Devices listed in bold, italic are Motorola preferred devices.

Table 4 — Schottky Rectifiers (continued)

V_{RRM} (Volts)	I_O, AVERAGE RECTIFIED FORWARD CURRENT (Amperes)(1)			
	120	200	300	600
	357C-03 POWERTAP™ Cathode = Mounting Plate Anode = Terminal  			
15		MBR20015CTL		
20		MBR20020CTL		
25		MBR20025CTL		
30		***MBR20030CTL***		
35	MBR12035CT	MBR20035CT	MBR30035CT	MBR60035CTL
40				
45	***MBR12045CT***	***MBR20045CT***	***MBR30045CT***	
50	MBR12050CT	MBR20050CT	MBR30050CT	
60	***MBR12060CT***	***MBR20060CT***	***MBR30060CT***	
70				
80				
90				
100				
I_{FSM} (Amperes)	800	1500	2500	4000
Max V_F @ $I_{FM} = I_O$	0.62 T_C = 175°C	0.48 T_C = 150°C	0.64 T_C = 125°C	0.50 T_C = 100°C
T_J (Max) °C	175	175	175	150

(1) I_O is total device output current.

Devices listed in bold, italic are Motorola preferred devices.