

TDSEMIC

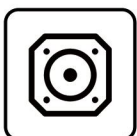
拓電半導體

自主封測 品質把控 售後保障

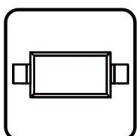
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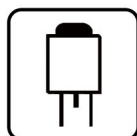
電源管理



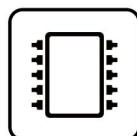
顯示驅動



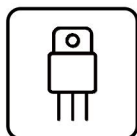
二三極管



LDO穩壓器



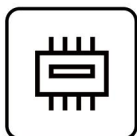
觸摸芯片



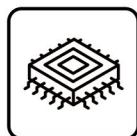
MOS管



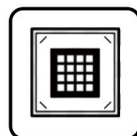
運算放大器



存儲芯片



MCU



串口通信

40HFR20-TD

產品規格說明書

Standard Recovery Diodes, (Stud Version), 40 A



DO-5 (DO-203AB)

FEATURES

- High surge current capability
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600 V V_{RRM}
- Designed and qualified for multiple level



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	40 A
Package	DO-5 (DO-203AB)
Circuit configuration	China

TYPICAL APPLICATIONS

- Battery charges
- Converters
- Power supplies
- Machine tool controls
- Welding

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	40HF(R)		UNITS
		10 TO 120	140/160	
$I_{F(AV)}$		40	40	A
	T_C	140	110	°C
$I_{F(RMS)}$		62	62	A
I_{FSM}	50 Hz	570	570	A
	60 Hz	595	595	
I^2t	50 Hz	1600	1600	A ² s
	60 Hz	1450	1450	
V_{RRM}	Range	100 to 1200	1400 to 1600	V
T_J		-65 to 190	-65 to 160	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
40HF(R)	10	100	200	9
	20	200	300	
	40	400	500	
	60	600	700	
	80	800	900	
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	4.5
	160	1600	1700	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		40HF(R)	UNITS
				10 TO 120	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		40	A
				140	°C
Maximum RMS forward current	$I_{F(RMS)}$			62	A
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reappplied	570	A
		t = 8.3 ms		595	
		t = 10 ms	100 % V_{RRM}	480	
		t = 8.3 ms	reappplied	500	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reappplied	1600	A ² s
		t = 8.3 ms		1450	
		t = 10 ms	100 % V_{RRM}	1150	
		t = 8.3 ms	reappplied	1050	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reappplied		16 000	A ² √s
Value of threshold voltage (up to 1200 V)	$V_{F(TO)}$	$T_J = T_J$ maximum		0.65	V
Value of threshold voltage (for 1400 V/1600 V)	$V_{F(TO)}$			0.76	
Value of forward slope resistance (up to 1200 V)	r_f	$T_J = T_J$ maximum		4.29	mΩ
Value of forward slope resistance (for 1400 V/1600 V)	r_f			3.8	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 125$ A, $T_J = 25$ °C, $t_p = 400$ μs rectangular wave		1.30	1.50

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		40HF(R)	UNITS
				10 to 120	
Maximum junction operating and storage temperature range	T_J, T_{Stg}			-65 to 190	-65 to 160
					°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.95	K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased		0.25	
Maximum allowable mounting torque (+0 %, -10 %)		Not lubricated thread, tightening on nut ⁽¹⁾		3.4 (30)	N · m (lbf · in)
		Lubricated thread, tightening on nut ⁽¹⁾		2.3 (20)	
		Not lubricated thread, tightening on hexagon ⁽²⁾		4.2 (37)	
		Lubricated thread, tightening on hexagon ⁽²⁾		3.2 (28)	
Approximate weight				17	g
				0.6	oz.
Case style		See dimensions - link at the end of datasheet		DO-5 (DO-203AB)	

Notes

- ⁽¹⁾ Recommended for pass-through holes
- ⁽²⁾ Recommended for holed threaded heatsinks

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.14	0.10	$T_J = T_J$ maximum	K/W
120°	0.16	0.17		
90°	0.21	0.22		
60°	0.30	0.31		
30°	0.50	0.50		

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

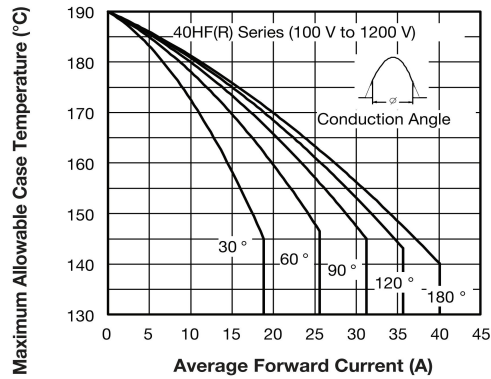


Fig. 1 - Current Ratings Characteristics

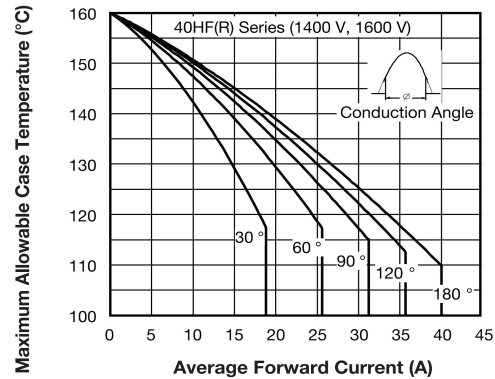


Fig. 3 - Current Ratings Characteristics

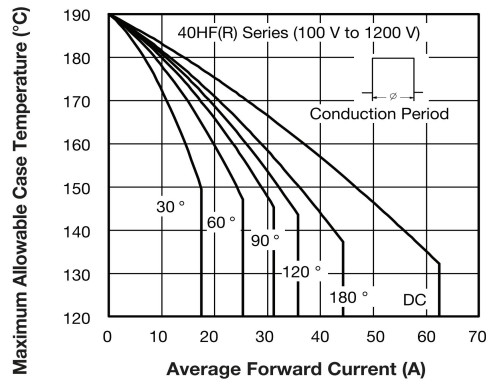


Fig. 2 - Current Ratings Characteristics

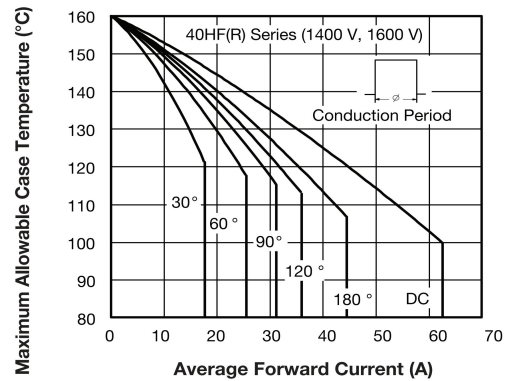


Fig. 4 - Current Ratings Characteristics

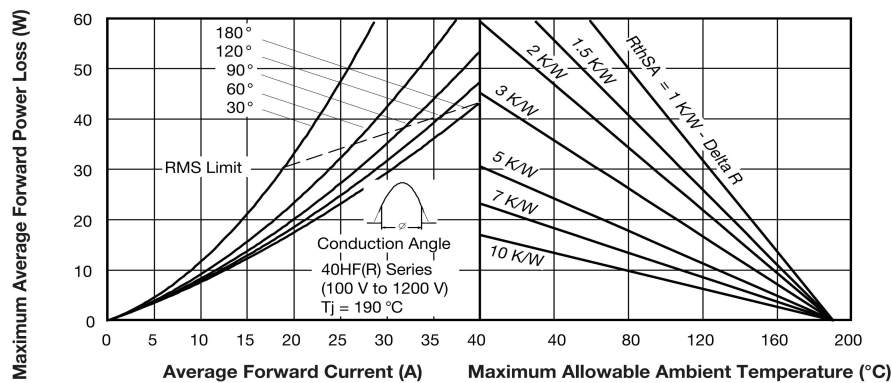
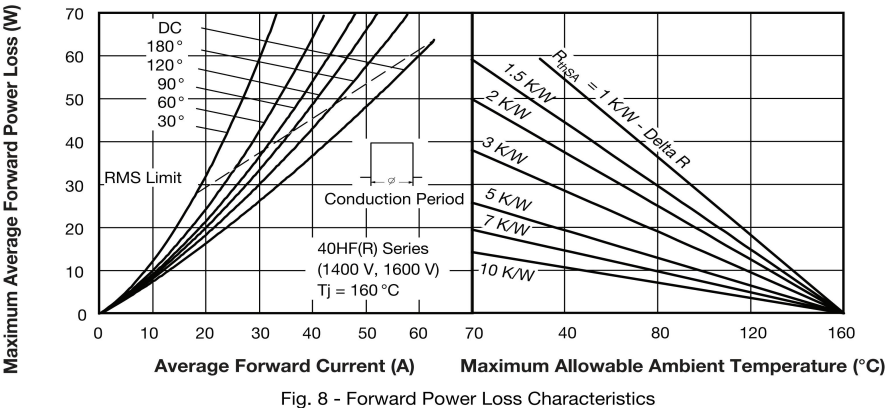
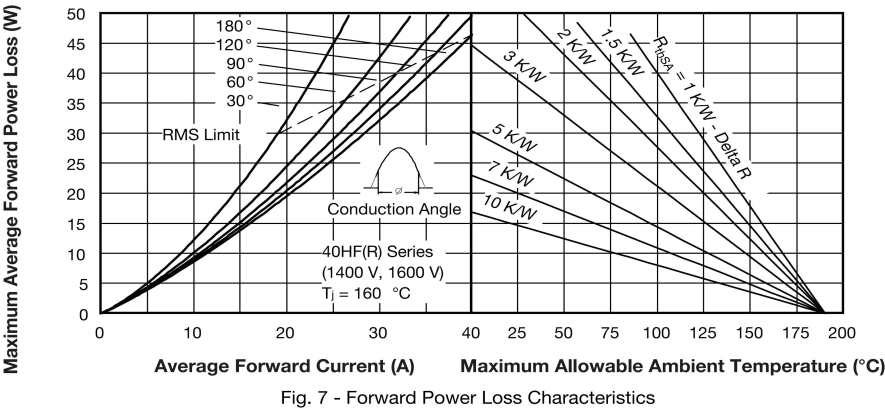
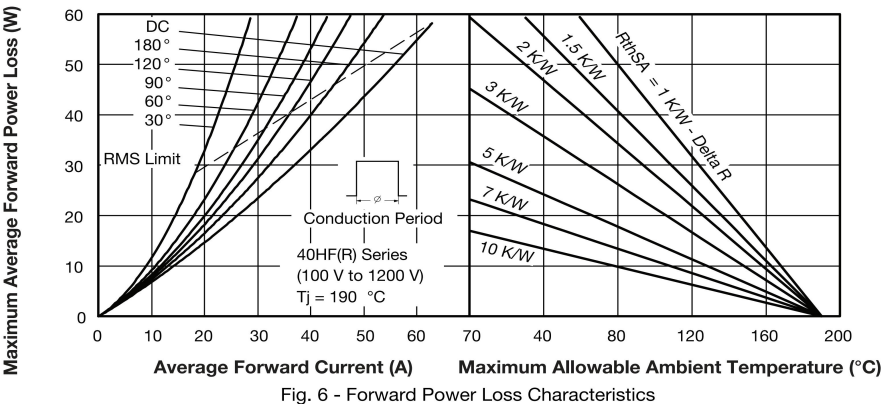


Fig. 5 - Forward Power Loss Characteristics



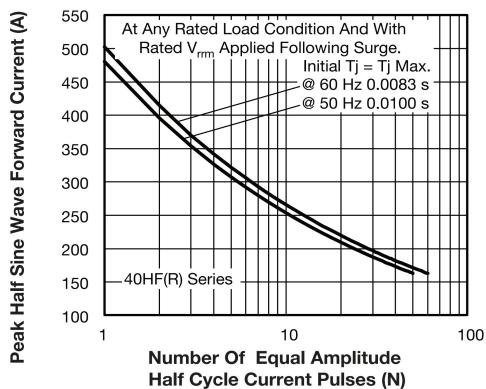


Fig. 9 - Maximum Non-Repetitive Surge Current

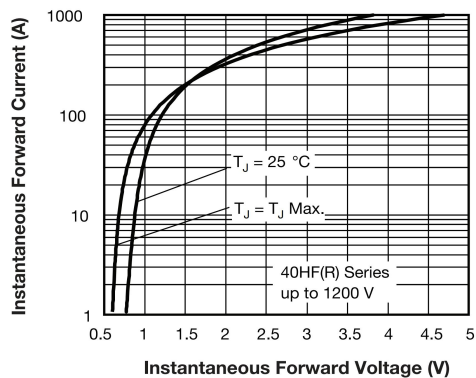


Fig. 11 - Forward Voltage Drop Characteristics (Up To 1200 V)

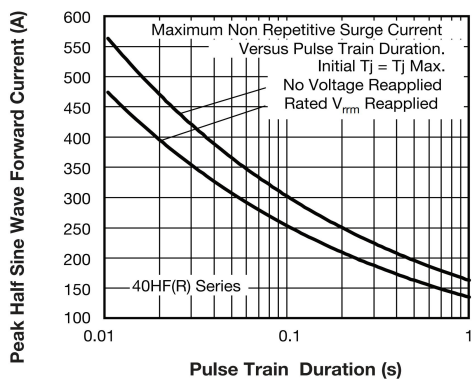


Fig. 10 - Maximum Non-Repetitive Surge Current

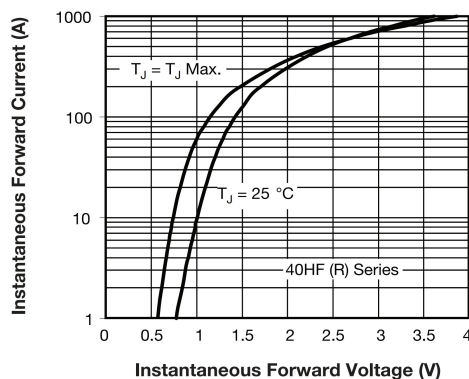


Fig. 12 - Forward Voltage Drop Characteristics (For 1400 V/1600 V)

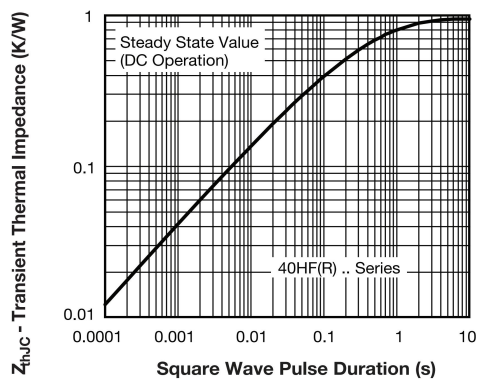
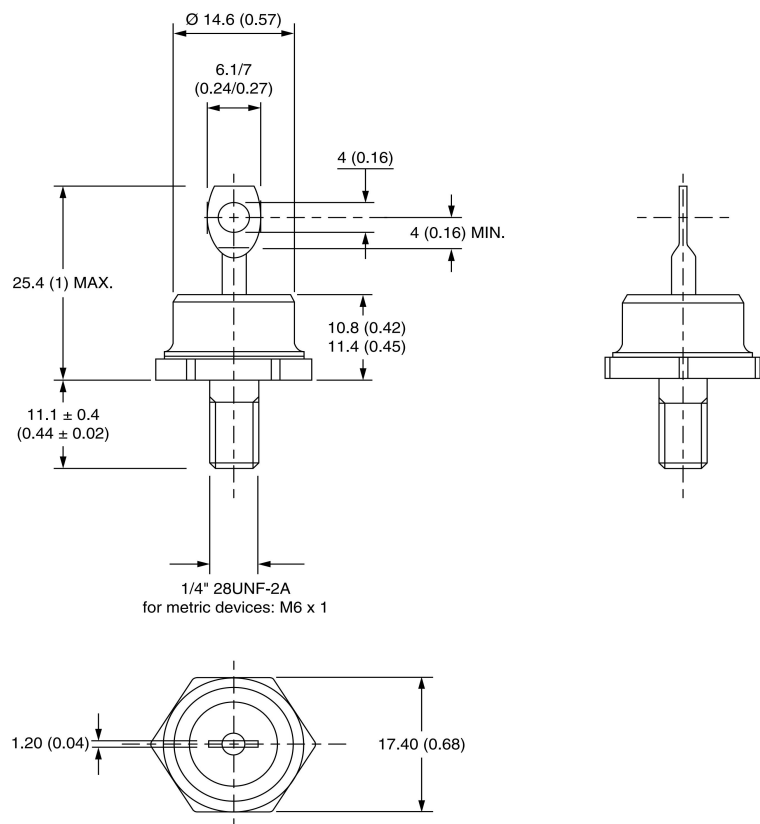


Fig. 13 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	40	HF	R	160	M
	1	2	3	4	5
1	- 40 = standard device				
2	- 41 = not isolated lead				
	- 42 = isolated lead with silicone sleeve				
	(red = reverse polarity)				
	(blue = normal polarity)				
	- HF = standard diode				
3	- None = stud normal polarity (cathode to stud)				
4	- R = stud reverse polarity (anode to stud)				
	- Voltage code x 10 = V_{RRM} (see Voltage Ratings table)				
5	- None = stud base DO-5 (DO-203AB) 1/4" 28UNF-2A				
	- M = stud base DO-5 (DO-203AB) M6 x 1				

DO-203AB (DO-5) 40HF(R)



DO-203AB (DO-5) 40HF(R)

