

TDSEMIC

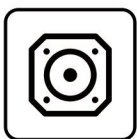
拓電半導體

自主封測 品質把控 售後保障

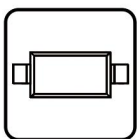
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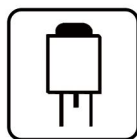
電源管理



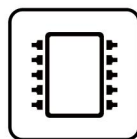
顯示驅動



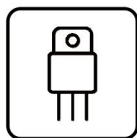
二三極管



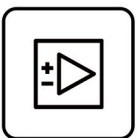
LDO穩壓器



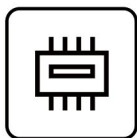
觸摸芯片



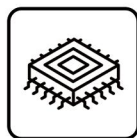
MOS管



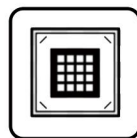
運算放大器



存儲芯片



MCU



串口通信

70HFR140-TD

產品規格說明書

Standard Recovery Diodes, (Stud Version), 70 A

70HF(R)



DO-5 (DO-203AB)

FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600 V V_{RRM}
- Designed and qualified for industrial level



RoHS
COMPLIANT

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	70 A
Package	DO-5 (DO-203AB)
Circuit configuration	China

TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	70HF(R)		UNITS
		10 TO 120	140/160	
$I_{F(AV)}$		70	70	A
	T_C	140	110	°C
$I_{F(RMS)}$		110	110	A
I_{FSM}	50 Hz	1200	1200	A
	60 Hz	1250	1250	
I^2t	50 Hz	7100	7100	A ² s
	60 Hz	6450	6450	
V_{RRM}	Range	100 to 1200	1400 to 1600	V
T_J		-65 to +180	-65 to +150	°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	$V_{R(BR)}$, MINIMUM AVALANCHE VOLTAGE V	I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
70HF(R)	10	100	200	200	15
	20	200	300	300	
	30	300	400	400	
	40	400	500	500	
	60	600	720	725	9
	80	800	960	950	
	100	1000	1200	1150	
	120	1200	1440	1350	
	140	1400	1650	1550	4.5
	160	1600	1900	1750	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		70HF(R)	UNITS
				10 to 120	140/160
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		70	A
Maximum RMS forward current	$I_{F(RMS)}$			140	110 °C
Maximum peak, one cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms t = 8.3 ms	No voltage reappplied	1200	A
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	1250	
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	1000	
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	1050	
Maximum I^2t for fusing	I^2t	t = 10 ms t = 8.3 ms	No voltage reappplied	7100	A ² s
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	6450	
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	5000	
		t = 10 ms t = 8.3 ms	100 % V_{RRM} reappplied	4550	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reappplied		71 000	A ² √s
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ maximum		0.79	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > $\pi \times I_{F(AV)}$), $T_J = T_J$ maximum		1.00	
Low level value of forward slope resistance	r_{f1}	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ maximum		2.33	mΩ
High level value of forward slope resistance	r_{f2}	(I > $\pi \times I_{F(AV)}$), $T_J = T_J$ maximum		1.53	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 220$ A, $T_J = 25$ °C, $t_p = 400$ μs rectangular wave		1.35	1.46 V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		70HF(R)	UNITS
				10 to 120	140/160
Maximum junction and storage temperature range	T_J, T_{Stg}			-65 to +180	-65 to +150 °C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.45	K/W
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
		Lubricated thread, tightening on nut ⁽¹⁾		2.3 (20)	(lbf · in)
		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°	0.08	0.06	$T_J = T_J$ maximum	K/W
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

Note

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

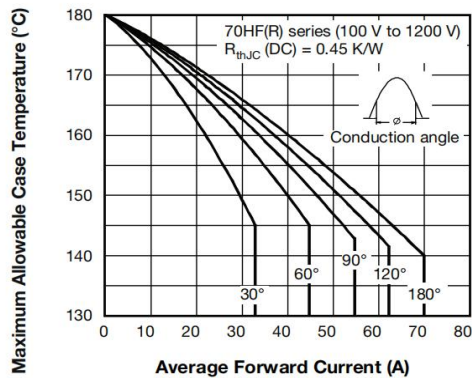


Fig. 1 - Current Ratings Characteristics

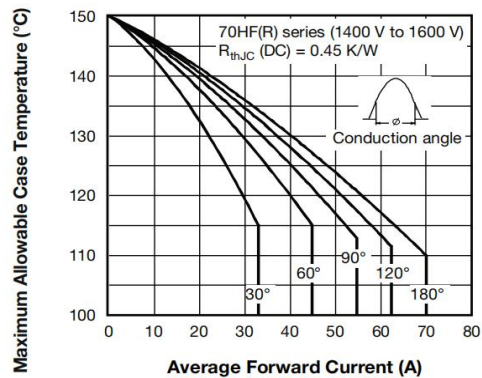


Fig. 3 - Current Ratings Characteristics

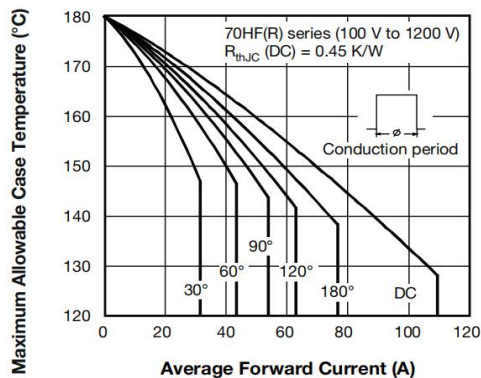


Fig. 2 - Current Ratings Characteristics

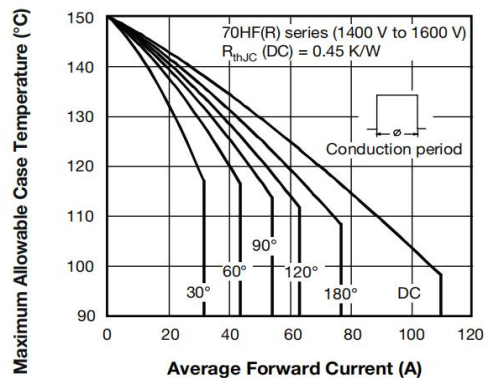


Fig. 4 - Current Ratings Characteristics

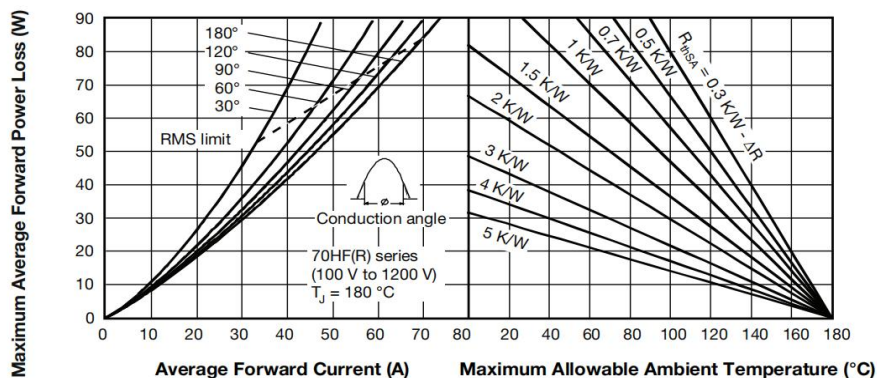


Fig. 5 - Forward Power Loss Characteristics

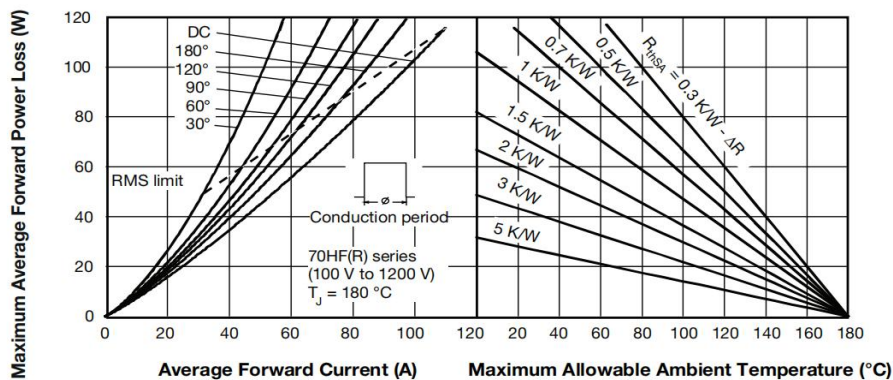


Fig. 6 - Forward Power Loss Characteristics

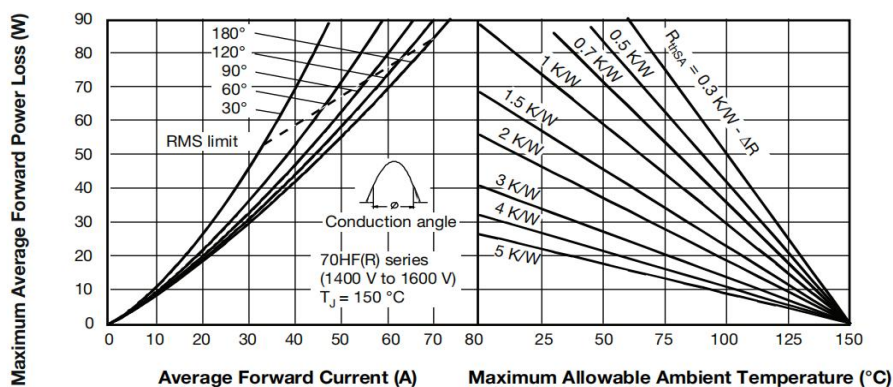


Fig. 7 - Forward Power Loss Characteristics

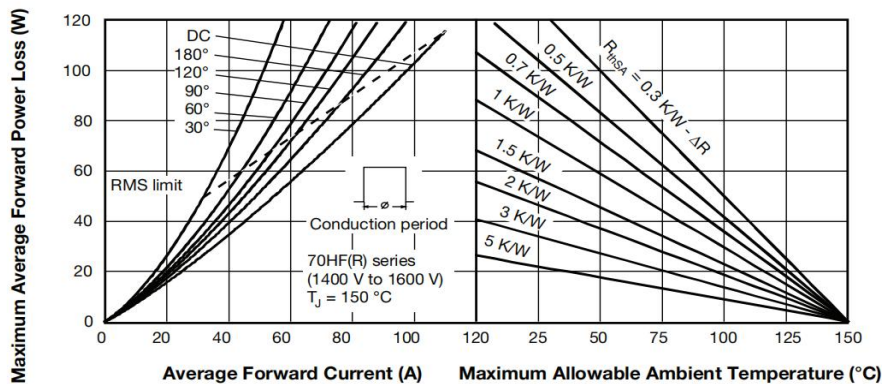


Fig. 8 - Forward Power Loss Characteristics

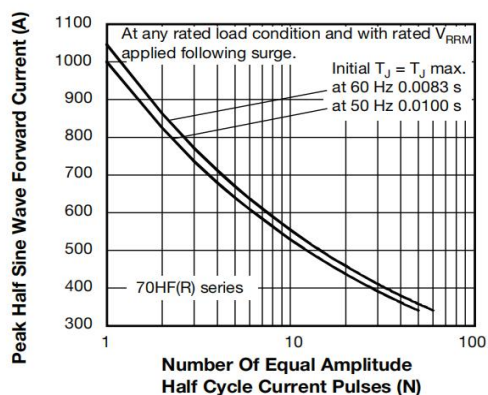


Fig. 9 - Maximum Non-Repetitive Surge Current

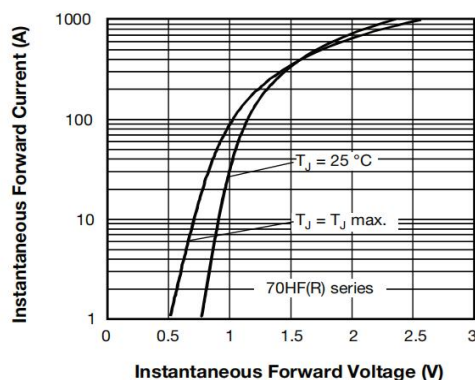


Fig. 11 - Forward Voltage Drop Characteristics

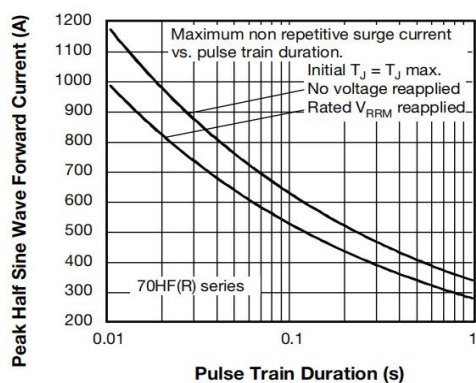


Fig. 10 - Maximum Non-Repetitive Surge Current

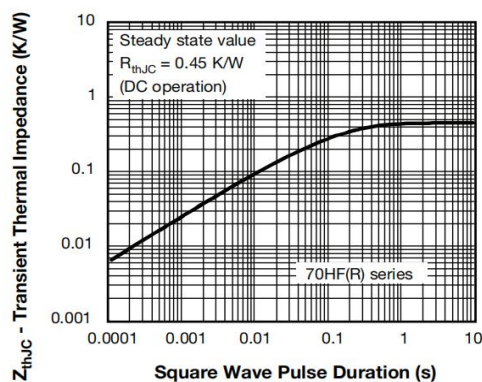


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

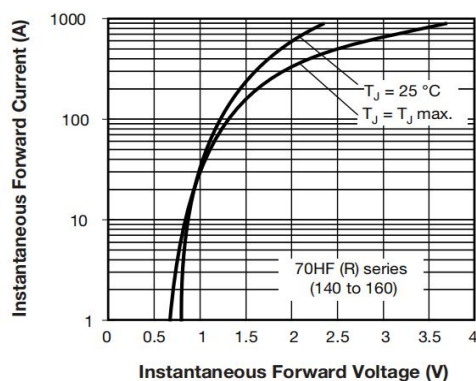
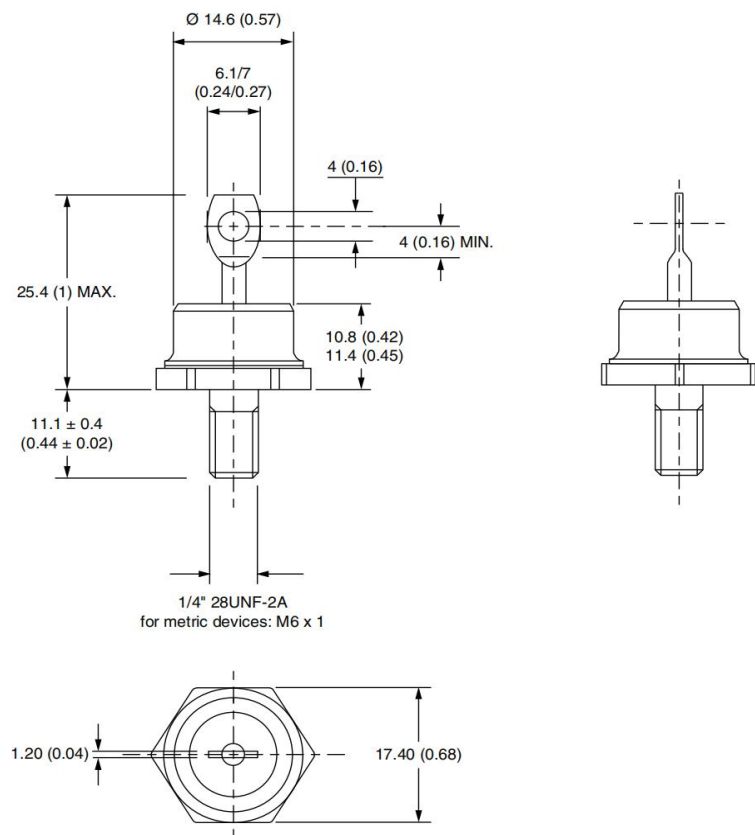


Fig. 13 - Forward Voltage Drop Characteristics

ORDERING INFORMATION TABLE

Device code	70	HF	R	160	M
	1	2	3	4	5
1	- 70 = standard device				
2	- 71 = not isolated lead				
	- 72 = 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) for 70HF(R)



DO-203AB (DO-5) for 70HF(R)

