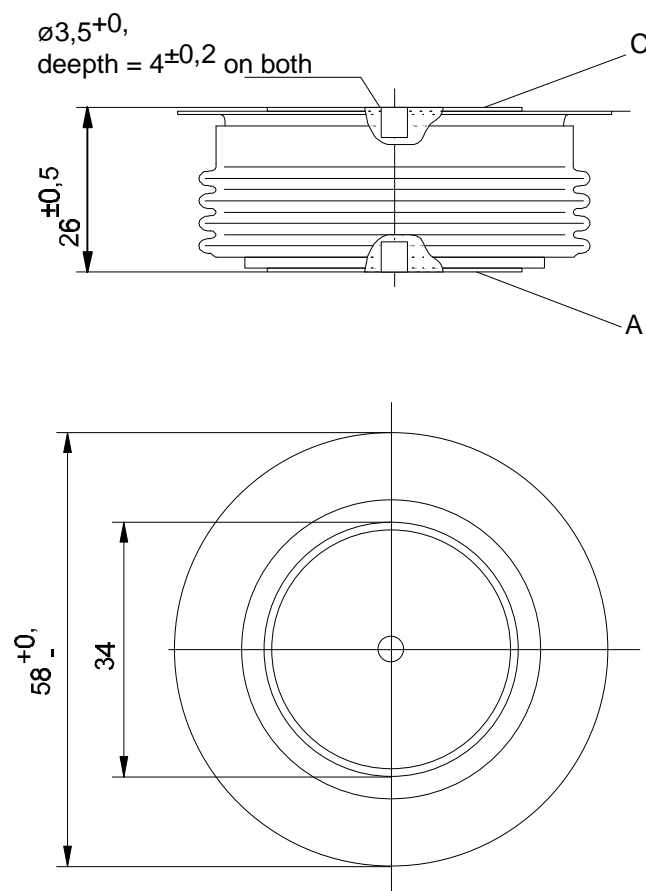




European Power-Semiconductor and Electronics Company

Marketing Information D 291 S



Applikation: Beschaltungsdioden zu GTO - Vorrichtungen
Application: Snubberdiode at GTO - Inverter

Elektrische Eigenschaften / Electrical properties

Höchstzulässige Werte / Maximum rated values

Periodische Spitzensperrspannung repetitive peak reverse voltage	$t_{vj} = -40^{\circ}\text{C} \dots 140^{\circ}\text{C}$	V_{RRM}	3500V, 4000 V 4500 V
Stoßspitzensperrspannung non-repetitive peak reverse voltage	$t_{vj} = +25^{\circ}\text{C} \dots 140^{\circ}\text{C}$	V_{RSM}	3600V, 4100 4600 V
Durchlaßstrom-Grenzeffektivwert / RMS forward current		I_{FRMSM}	700 A
Dauergrenzstrom / mean forward current	$t_c = 85^{\circ}\text{C}$ $t_c = 51^{\circ}\text{C}$	I_{FAVM}	290 A 445 A
Stoßstrom-Grenzwert ¹⁾ surge forward current ¹⁾	$t_{vj} = 25^{\circ}\text{C}$ $t_{vj} = 125^{\circ}\text{C}$	I_{FSM}	5200 A 4500 A
Grenzlastintegral I^2t -value	$t_{vj} = 25^{\circ}\text{C}$ $t_{vj} = 125^{\circ}\text{C}$	I^2t	135000 100000 A ² s
Kritische periodische Ausschaltstromsteilheit critical repetitive rate of fall of on - state	$t_{vj} = 125^{\circ}\text{C}$, $I_M = 3000$ A, $V_{RM} = 1600$ V $C = 0,125$ μF , $R = 6\Omega$	$(-di/dt)_{com}$	700 A/ μs

Charakteristische Werte / Characteristic values

Durchlaßspannung / forward voltage	$t_{vj} = 125^{\circ}\text{C}$, $I_M = 1200$ A	V_F	4,15 V
Schleusenspannung / threshold voltage	$t_{vj} = 125^{\circ}\text{C}$	$V_{(TO)}$	1,9 V
Ersatzwiderstand / forward slope resistance	$t_{vj} = 125^{\circ}\text{C}$	r_T	1,76 m Ω
Sperrstrom / reverse current	$t_{vj} = 125^{\circ}\text{C}$, $V_R = 0,67 V_{RRM}$ $t_{vj} = 125^{\circ}\text{C}$, $V_R = V_{RRM}$	i_R	ca. 30 mA 50 mA
Rückstromspitze / peak reverse recovery current	$i_{FM} = 1000$ A, $-di/dt = 250$ A/ μs $t_{vj} = 125^{\circ}\text{C}$; $V_{R(Spr)} = 1000$ V; $C = 0,125$ μF ; $R = 6\Omega$	I_{RM}	500 A
Sperrverzögerungsladung recovered charge	$i_{FM} = 1000$ A, $-di/dt = 250$ A/ μs $t_{vj} = 125^{\circ}\text{C}$; $V_{R(Spr)} = 1000$ V; $C = 0,125$ μF ; $R = 6\Omega$	Q_{rr}	950 μAs

Thermische Eigenschaften / Thermal properties

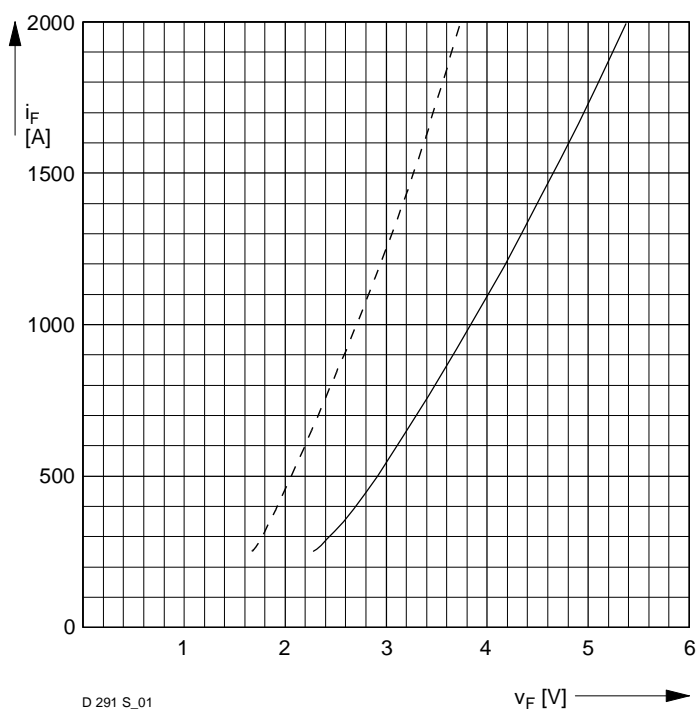
Innerer Wärmewiderstand thermal resistance, junction to case	Kühlfläche / cooling surface beidseitig / two-sided einseitig / single-sided	R_{thJC}	0,04 K/W 0,08 K/W
Übergangs-Wärmewiderstand thermal resistance, case to heatsink	Kühlfläche / cooling surface beidseitig / two-sided einseitig / single-sided	R_{thCK}	0,006 K/W 0,012 K/W
Höchstzulässige Sperrschichttemp. / max. junction temperat.		t_{vjmax}	125 $^{\circ}\text{C}$
Betriebstemperatur / operating temperature		$t_c op$	-40...+125 $^{\circ}\text{C}$
Lagertemperatur / storage temperature		t_{stg}	-40...+150 $^{\circ}\text{C}$

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage / case, see appendix		Seite / page 1	
Anpreßkraft / clamping force		F	9...13 kN
Gewicht / weight		G	ca. 250 g
Luftstrecke / air distance			20 mm
Kriechstrecke / creepage distance			30 mm
Feuchteklasse / humidity classification	DIN 40040		C
Schwingfestigkeit / vibration resistance	f = 50 Hz		50 m/s ²

Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen.

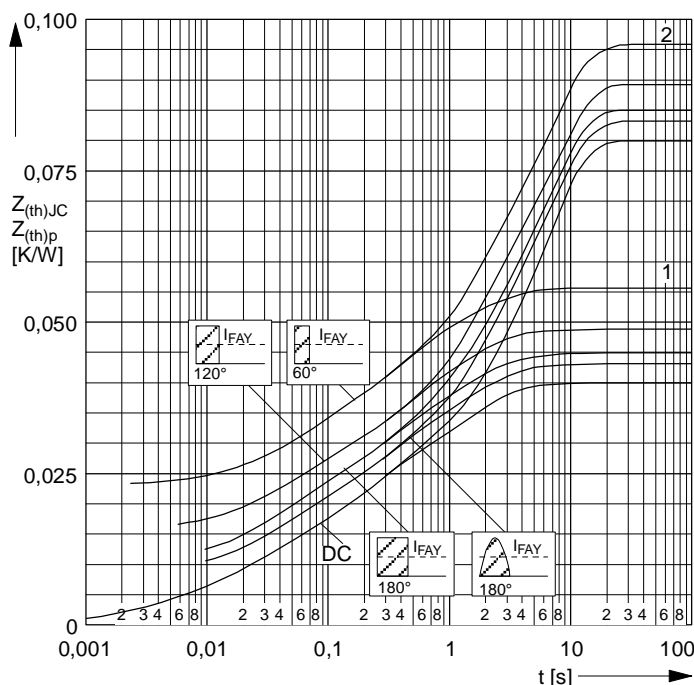
This technical information specifies semiconductor devices but promises no characteristics. It is valid in combination with the belonging technical notes.



D 291 S_01

Fig. 1
On-state characteristics $i_F = f(v_F)$
 $t_{vj} = 125^\circ\text{C}$

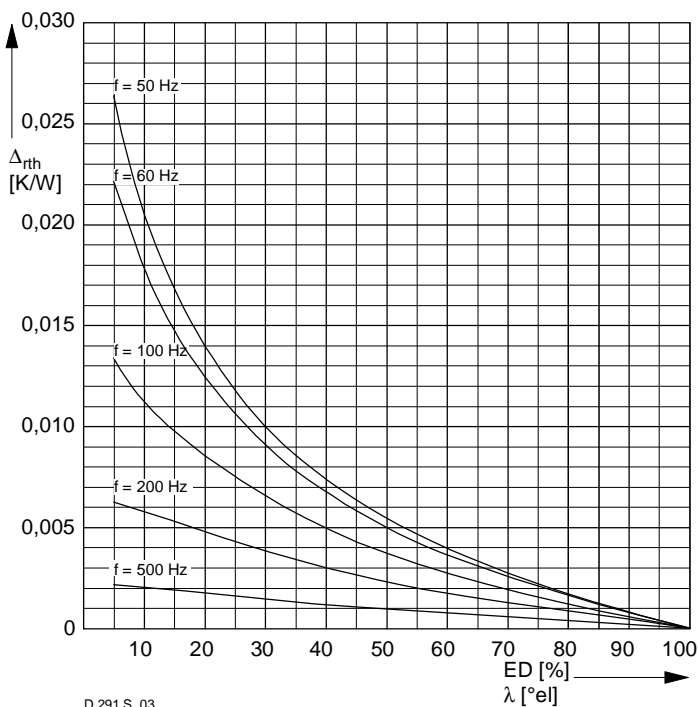
— Upper limit of scatter range
- - - Lower limit of scatter range



D 291 S_02

Fig. 2
Transient thermal impedance DC and impuls current
($f = 50\text{ Hz}$)
Parameter: Current wave form

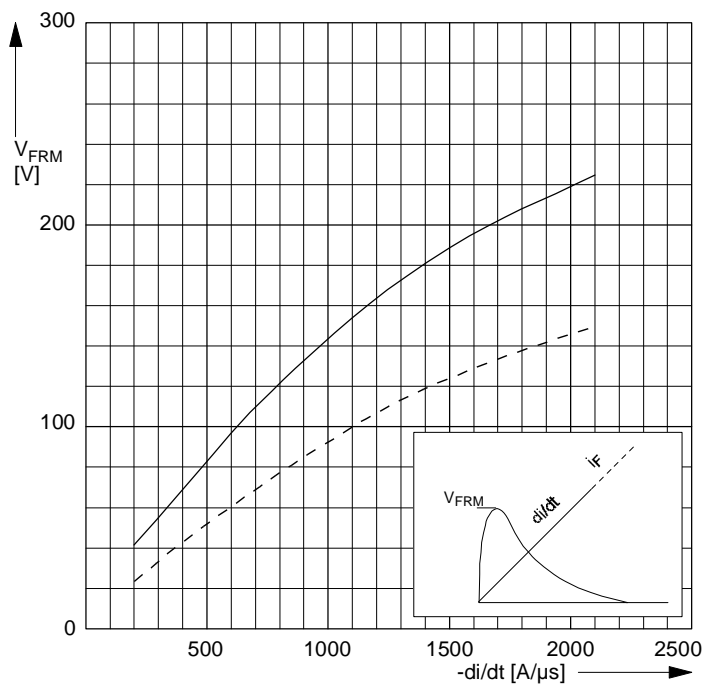
1. single-sided cooling
2. both-sided cooling



D 291 S_03

Fig. 3
 $\Delta_{rth} = f(ED, \text{frequency})$

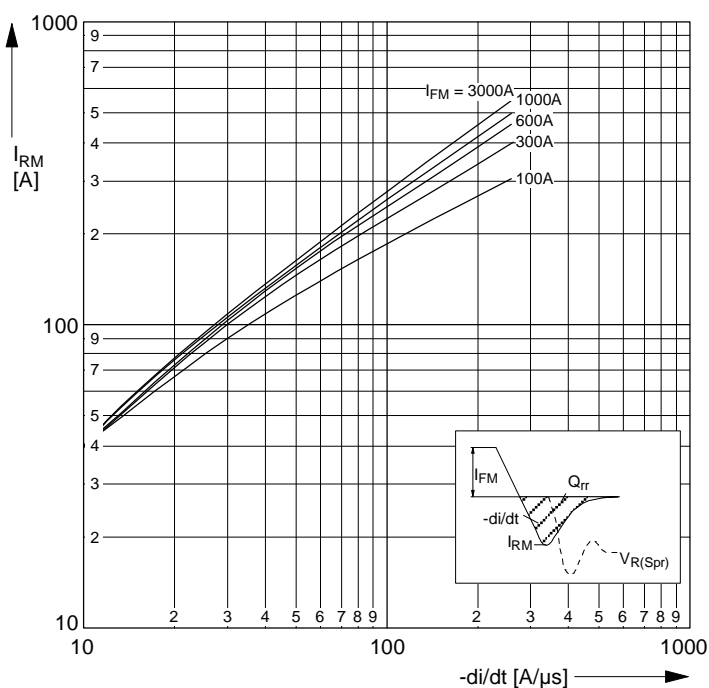
Both-sided and one-sided cooling
Current wave form: squarewave
Parameter: frequency



D 291 S_08

Fig. 4
Peak forward recovery voltage (typical values)

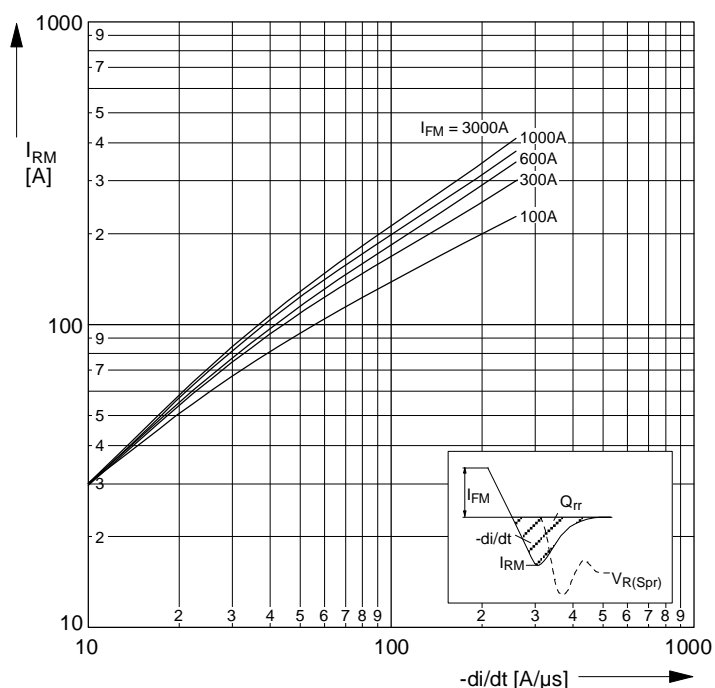
— $t_{vj} = 125^\circ\text{C}$
- - - $t_{vj} = 25^\circ\text{C}$



D 291 S_04

Fig. 5
Reverse recovery current (upper limit ca. 98% value)
 $I_{RM} = f(di/dt)$

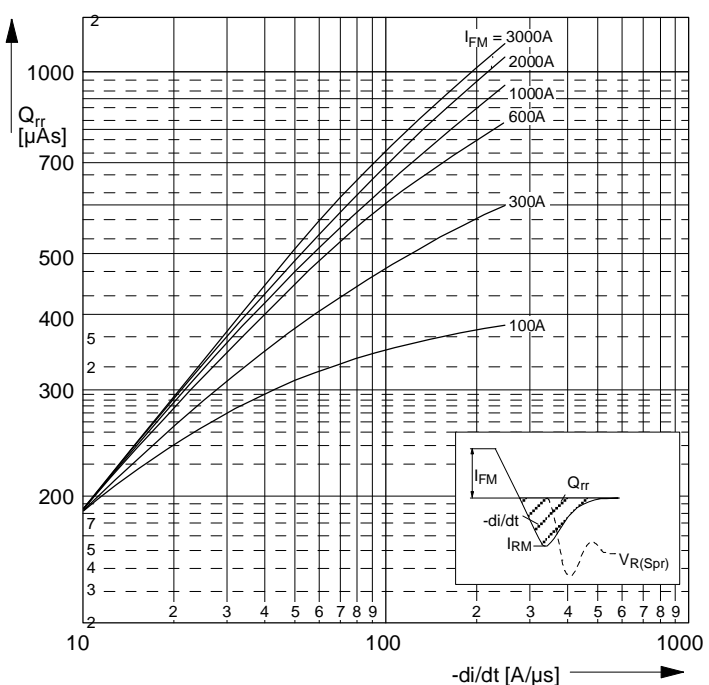
Parameter: I_{FM}
 $t_{vj} \leq 125^\circ\text{C}$; $C_S = 0,125 \mu\text{F}$
 $R_S = 6 \Omega$; $V_{R(Spr)} = 1000 \text{ V}$



D 291 S_05

Fig. 6
Reverse recovery current (lower limit ca. 2% value)
 $I_{RM} = f(di/dt)$

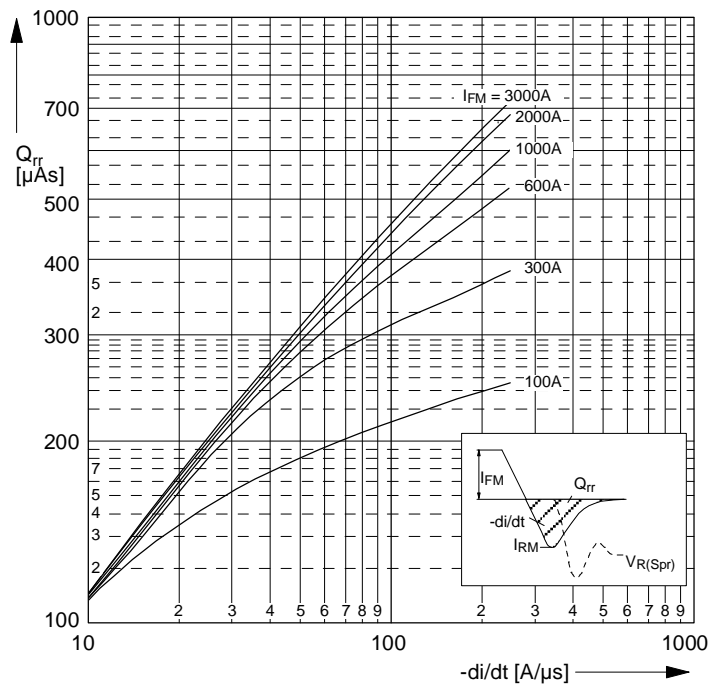
Parameter: I_{FM}
 $t_{vj} \leq 125^\circ\text{C}$; $C_S = 0,125 \mu\text{F}$
 $R_S = 6 \Omega$; $V_{R(Spr)} = 1000 \text{ V}$



D 291 S_07

Fig. 7
Reverse recovery charge (upper limit ca. 98% value)
 $Q_{rr} = f(di/dt)$

Parameter: I_{FM}
 $t_{vj} \leq 125^\circ\text{C}$; $C_S = 0,1 \mu\text{F}$
 $R_S = 6 \Omega$; $V_{R(Spr)} = 1000 \text{ V}$



D 291 S_06

Fig. 8
Reverse recovery charge (lower limit ca. 2% value)
 $Q_{rr} = f(di/dt)$

Parameter: I_{FM}
 $t_{vj} \leq 125^\circ\text{C}$; $C_S = 0,1 \mu\text{F}$
 $R_S = 6 \Omega$; $V_{R(Spr)} = 1000 \text{ V}$