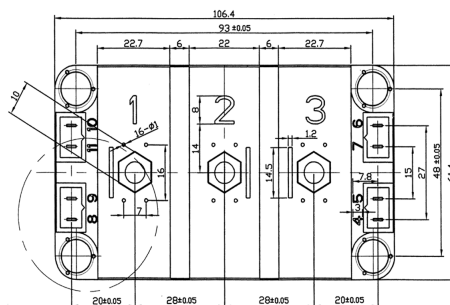
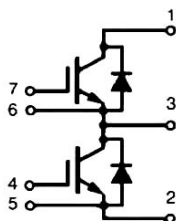
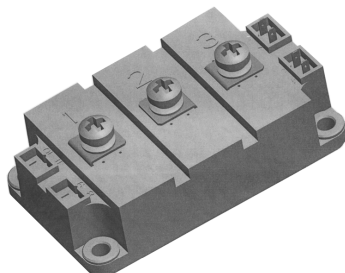


SII300N12

NPT IGBT Modules

Dimensions in mm (1mm = 0.0394")



Absolute Maximum Ratings

$T_c = 25^\circ\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT Wechselrichter/ IGBT Inverter			
V_{CES}		1200	V
I_c	$T_c = 25(80)^\circ\text{C}$, $T_{vj} = 150^\circ\text{C}$	625(300)	A
I_{CRM}	$T_c = 80^\circ\text{C}$, $t_p = 1\text{ms}$	600	A
P_{tot}	$T_c = 25^\circ\text{C}$, $T_{vj} = 150^\circ\text{C}$	2500	W
V_{GES}		± 20	V
Diode Wechselrichter/ Diode Inverter			
V_{RRM}		1200	V
I_F		300	A
I_{FRM}	$t_p = 1\text{ms}$	600	A
I^2t	$V_R = 0\text{V}$, $t_p = 10\text{ms}$; $T_{vj} = 125^\circ\text{C}$	19000	A^2s
Module Isolation/ Module Isolation			
V_{ISOL}	RMS, $f = 50\text{Hz}$, $t = 1\text{min}$, NTC connect to Baseplate	2500	V

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NPT IGBT Modules

Characteristics

$T_c = 25^\circ\text{C}$, unless otherwise specified

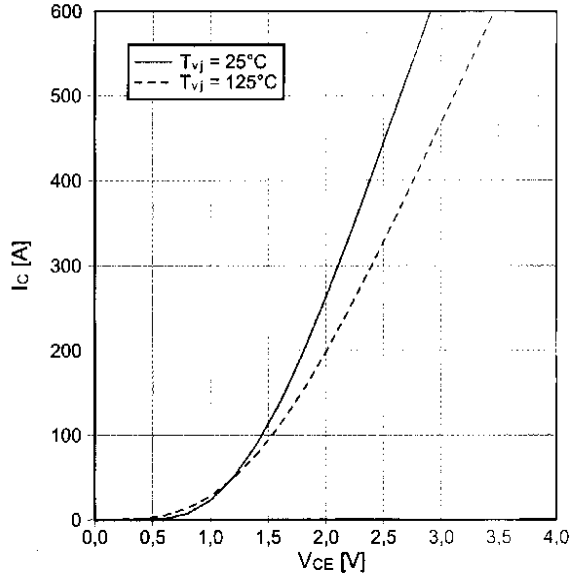
Symbol	Conditions	min.	typ.	max.	Units
IGBT Wechselrichter/ IGBT Inverter					
V_{GEth}	$V_{GE} = V_{CE}, I_c = 12\text{mA}$	4.5	5.5	6.5	V
I_{CES}	$V_{GE} = 0; V_{CE} = 1200\text{V}$			5	mA
I_{GES}	$V_{CE}=0; V_{GE}=20\text{V}$			400	nA
R_{Gint}			1.0		Ω
$V_{CE(sat)}$	$I_c = 300\text{A}; V_{GE} = 15\text{V}; T_j = 25(125)^\circ\text{C}$		2.1(2.4)	2.6(2.9)	V
C_{ies}	under following conditions		21		nF
C_{res}	$V_{GE} = 0, V_{CE} = 25\text{V}, f = 1\text{MHz}$		1.4		nF
Q_G	$V_{GE} = -15\text{V}...+15\text{V}$		3.2		μC
I_{sc}	$t_p \leq 10\mu\text{s}, V_{GE} \leq 15\text{V}, T_{vj} = 125^\circ\text{C}, V_{CC} = 900\text{V}$		1800		A
$t_{d(on)}$	under following conditions: $V_{CE} = 600\text{V}, I_c = 300\text{A}$		110(120)		ns
t_r	$R_{Gon} = R_{Goff} = 3.3\Omega, T_j = 25(125)^\circ\text{C}$		60(70)		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{V}$		550(570)		ns
t_f			70(80)		ns
$E_{on}(E_{off})$	$T_j = 25(125)^\circ\text{C}, L_s = 60\text{nH}$		35(36)		mJ
R_{thJC}				0.05	K/W
R_{thCH}			0.03		K/W
Diode Wechselrichter/ Diode Inverter					
V_F	under following condition $I_F = 300\text{A}; V_{GE} = 0\text{V}; T_j = 25(125)^\circ\text{C}$		1.8(1.7)	2.3(2.2)	V
I_{RM}	$I_F = 300\text{A}; T_j = 25(125)^\circ\text{C}$		350(420)		A
Q_r	$-di/dt = 5400\text{A}/\mu\text{s}$		28(58)		μC
E_{rec}	$V_{GE} = -15\text{V}, V_R=600\text{V}$		9(21)		mJ
R_{thJC}				0.125	K/W
R_{thCH}			0.06		K/W
Modul/ module					
R_{thCH}	under following conditions $I_c = 15\text{A}; V_{GE} = 15\text{V}; T_j = 25(125)^\circ\text{C}$		1.7(2.0)	2.15	V
L_{sCE}	$V_{CE}=V_{GE}, I_c=0.5\text{mA}$	5.0	5.8	6.5	V
$R_{CC'+EE'}$	$f=1\text{MHz}, V_{CE}=25\text{V}, V_{GE}=0\text{V}$		1.1		nF
T_{VJ}			-40...+125		$^\circ\text{C}$
T_{VJM}			150		
T_{stg}			-40...+125		
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M5	2.5		5	Nm
W				325	g

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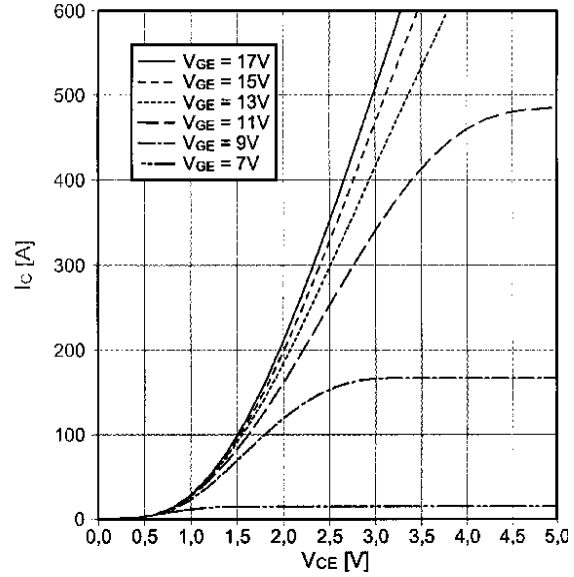
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NPT IGBT Modules

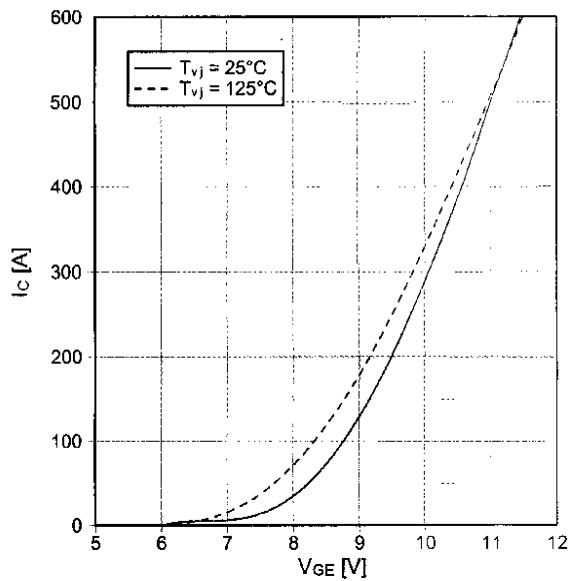
Ausgangskennlinie IGBT-Wechselr. (typisch)
output characteristic IGBT-inverter (typical)
 $I_c = f(V_{CE})$
 $V_{GE} = 15\text{ V}$



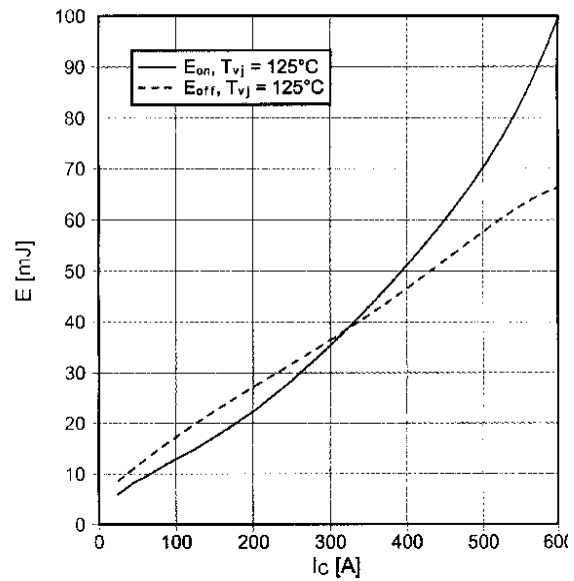
Ausgangskennlinienfeld IGBT-Wechselr. (typisch)
output characteristic IGBT-inverter (typical)
 $I_c = f(V_{CE})$
 $T_{vj} = 125^\circ\text{C}$



Übertragungscharakteristik IGBT-Wechselr. (typisch)
transfer characteristic IGBT-inverter (typical)
 $I_c = f(V_{GE})$
 $V_{CE} = 20\text{ V}$



Schaltverluste IGBT-Wechselr. (typisch)
switching losses IGBT-inverter (typical)
 $E_{on} = f(I_c)$, $E_{off} = f(I_c)$
 $V_{GE} = \pm 15\text{ V}$, $R_{Gon} = 3,3\ \Omega$, $R_{Goff} = 3,3\ \Omega$, $V_{CE} = 600\text{ V}$

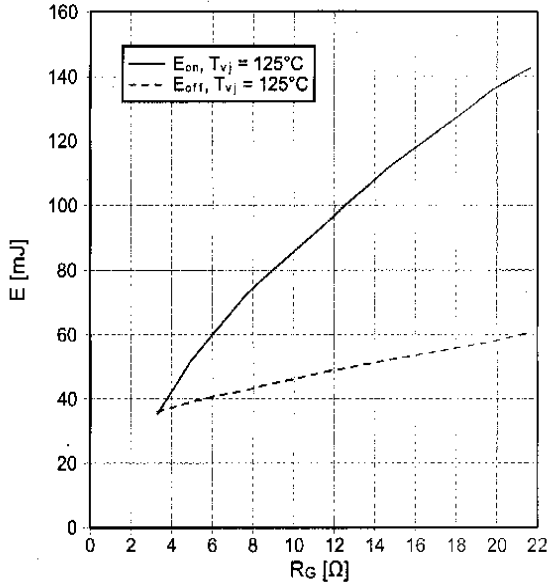


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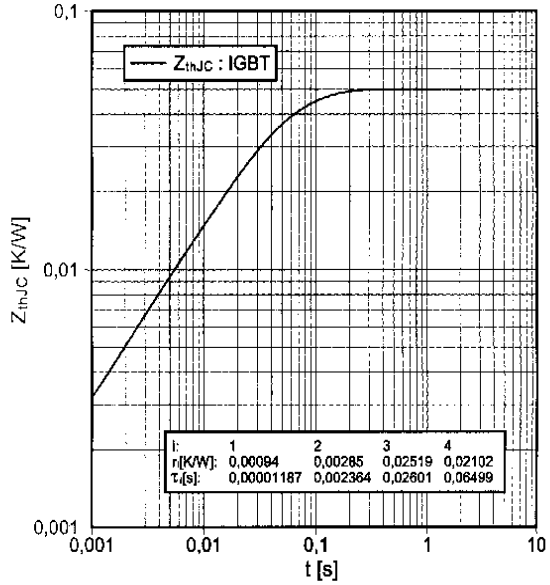
SII300N12

NPT IGBT Modules

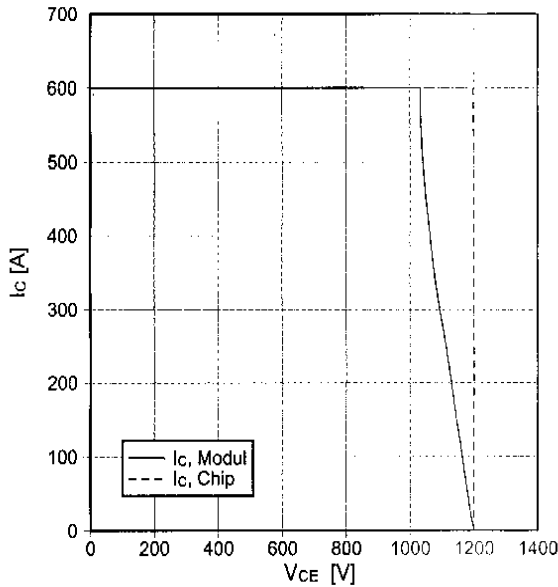
Schaltverluste IGBT-Wechselr. (typisch)
 switching losses IGBT-inverter (typical)
 $E_{on} = f(R_G)$, $E_{off} = f(R_G)$
 $V_{GE} = \pm 15 \text{ V}$, $I_c = 300 \text{ A}$, $V_{CE} = 600 \text{ V}$



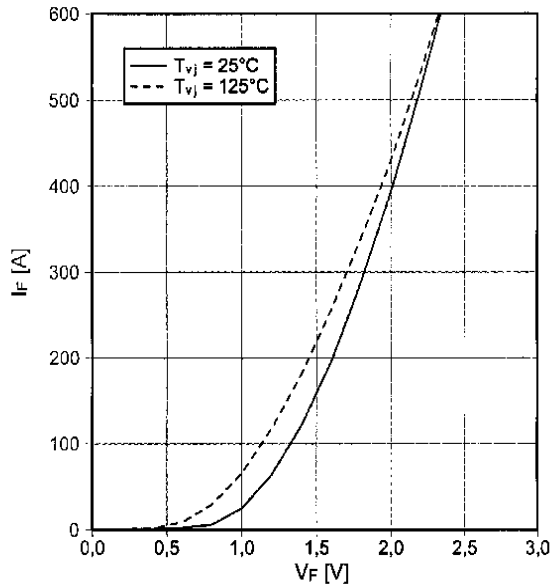
Transienter Wärmewiderstand IGBT-Wechselr.
 transient thermal impedance IGBT-inverter
 $Z_{thJC} = f(t)$



Sicherer Rückwärts-Arbeitsbereich IGBT-Wr. (RBSOA)
 reverse bias safe operating area IGBT-inv. (RBSOA)
 $I_c = f(V_{CE})$
 $V_{GE} = \pm 15 \text{ V}$, $R_{Goff} = 3,3 \Omega$, $T_{vj} = 125^\circ\text{C}$



Durchlaßkennlinie der Diode-Wechselr. (typisch)
 forward characteristic of diode-inverter (typical)
 $I_F = f(V_F)$

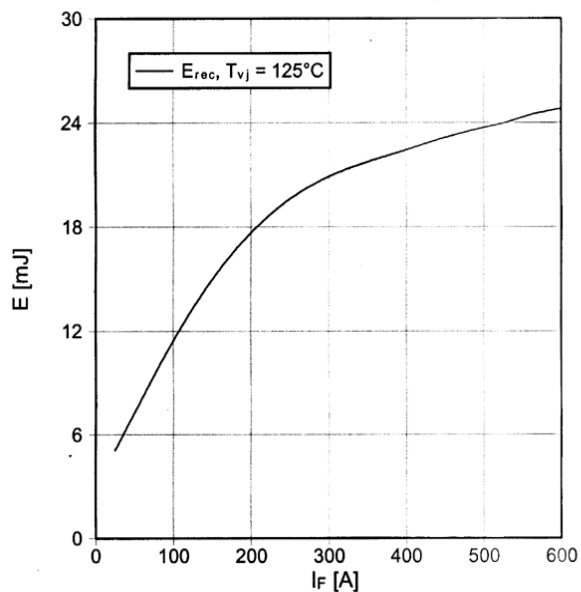


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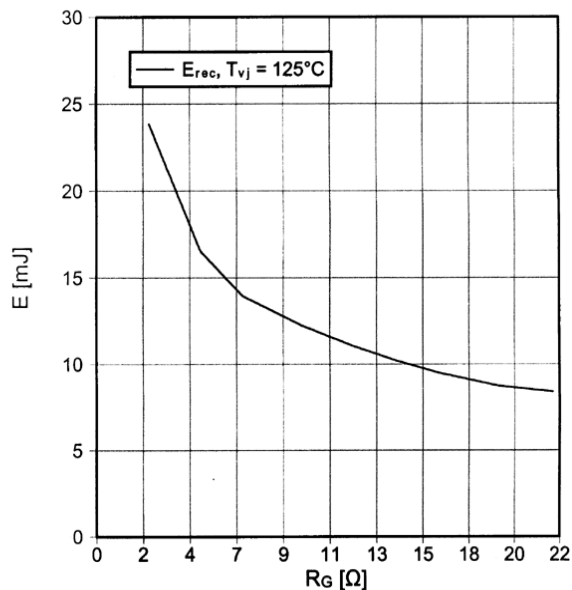
SII300N12

NPT IGBT Modules

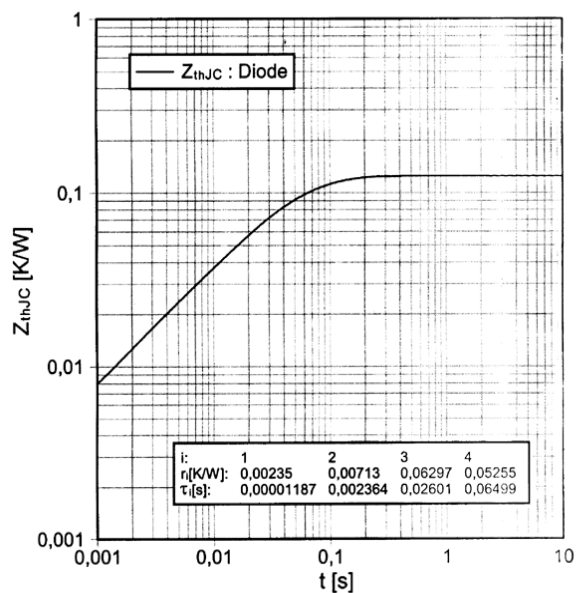
Schaltverluste Diode-Wechselr. (typisch)
switching losses diode-inverter (typical)
 $E_{rec} = f(I_F)$
 $R_{Gon} = 3,3 \Omega$, $V_{CE} = 600 V$



Schaltverluste Diode-Wechselr. (typisch)
switching losses diode-inverter (typical)
 $E_{rec} = f(R_G)$
 $I_F = 300 A$, $V_{CE} = 600 V$



Transienter Wärmewiderstand Diode-Wechselr.
transient thermal impedance diode-inverter
 $Z_{thJC} = f(t)$



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