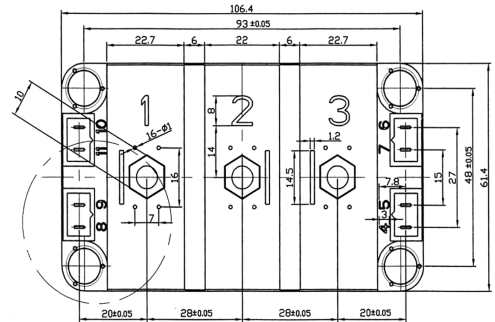
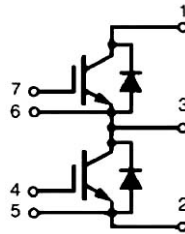
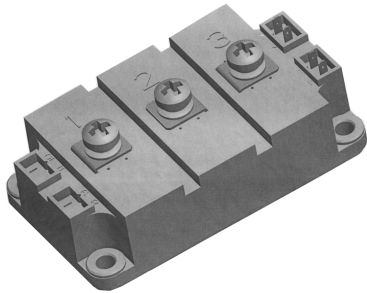


# SII150N06

## 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
<b>IGBT Wechselrichter/ IGBT Inverter</b>			
$V_{CES}$		600	V
$I_c$	$T_c = 25(60)^\circ\text{C}$	180(150)	A
$I_{CRM}$	$T_c = 60^\circ\text{C}$ , $t_P = 1\text{ms}$	300	A
$P_{tot}$	$T_c = 25^\circ\text{C}$ , $T_{vj} = 150^\circ\text{C}$	595	W
$V_{GES}$		+20	V
<b>Diode Wechselrichter/ Diode Inverter</b>			
$I_F$		150	A
$I_{FRM}$	$t_P = 1\text{ms}$	300	A
$I^2t$	$V_R = 0\text{V}$ , $t_P = 10\text{ms}$ ; $T_{vj} = 125^\circ\text{C}$	2.3	$\text{A}^2\text{s}$
<b>Module Isolation/ Module Isolation</b>			
$V_{ISOL}$	RMS, $f = 50\text{Hz}$ , $t = 1\text{min}$ , NTC connect to Baseplate	2500	V

# SII150N06

## NPT IGBT Modules

### Characteristics

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

Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT Wechselrichter/ IGBT Inverter</b>					
$V_{GEth}$	$V_{GE} = V_{CE}$ , $I_c = 3.0\text{mA}$	4.5	5.5	6.5	V
$I_{CES}$	$V_{GE} = 0$ ; $V_{CE} = 600\text{V}$ , $T_j = 25(125)^\circ\text{C}$		1(1000)	500	$\mu\text{A}$
$I_{GES}$	$V_{CE} = 0$ ; $V_{GE} = 20\text{V}$			400	nA
$V_{CE(sat)}$	$I_c = 150\text{A}$ ; $V_{GE} = 15\text{V}$ ; $T_j = 25(125)^\circ\text{C}$		1.95(2.2)	2.45(-)	V
$C_{ies}$	under following conditions		6.5		nF
$C_{res}$	$V_{GE} = 0$ , $V_{CE} = 25\text{V}$ , $f = 1\text{MHz}$		0.6		
$L_{CE}$			40		nH
$I_{sc}$	$t_p \leq 10\mu\text{s}$ , $V_{GE} \leq 15\text{V}$ , $T_{vj} = 125^\circ\text{C}$ , $V_{cc} = 360\text{V}$		675		A
$t_{d(on)}$	under following conditions: $V_{CC} = 300\text{V}$ , $I_c = 150\text{A}$		115(125)		ns
$t_r$	$R_{Gon} = R_{Goff} = 1.5\Omega$ , $T_j = 25(125)^\circ\text{C}$		28(30)		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{V}$		200(225)		ns
$t_f$			25(35)		ns
$E_{on}(E_{off})$	$T_j = 25(125)^\circ\text{C}$ , $L_s = 15\text{nH}$		2.3(4.6)		mJ
$R_{CC'+EE'}$			1.0		$\text{m}\Omega$
$R_{thJC}$			0.21		K/W
<b>Diode Wechselrichter/ Diode Inverter</b>					
$V_F$	under following condition $I_F = 150\text{A}$ ; $V_{GE} = 0\text{V}$ ; $T_j = 25(125)^\circ\text{C}$		1.25(1.2)	1.6(-)	V
$I_{RM}$	$I_F = 150\text{A}$ ; $T_j = 25(125)^\circ\text{C}$		180(215)		A
$Q_r$	$-di/dt = 5600\text{A}/\mu\text{s}$		11(19)		$\mu\text{C}$
$E_{rec}$	$V_{GE} = -10\text{V}$ , $V_R = 300\text{V}$		-(4.7)		mJ
$R_{thJC}$				0.4	K/W
$R_{thCK}$			0.02		K/W
$T_{VJ}$			-40...+125		$^\circ\text{C}$
$T_{VJM}$			150		
$T_{stg}$			-40...+125		
<b>Mechanical Data</b>					
$M_s$	to heatsink M6	3		5	Nm
$M_t$	to terminals M5	2.5		5	Nm
$w$				325	g

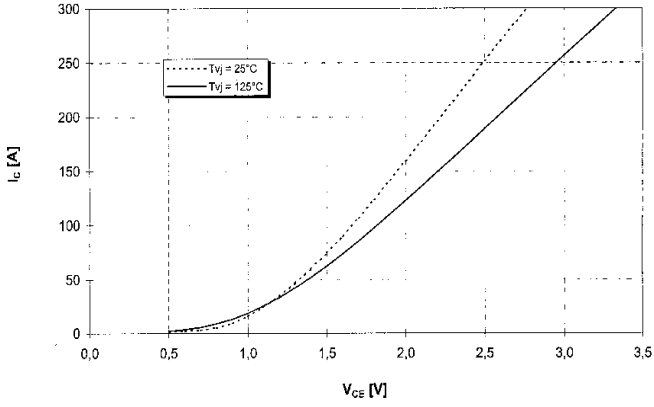
# SII150N06

## NPT IGBT Modules

Ausgangskennlinie (typisch)  
Output characteristic (typical)

$$I_C = f(V_{CE})$$

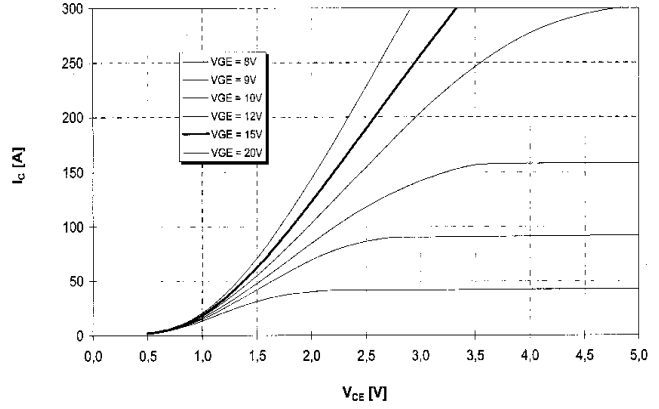
$V_{GE} = 15V$



Ausgangskennlinienfeld (typisch)  
Output characteristic (typical)

$$I_C = f(V_{CE})$$

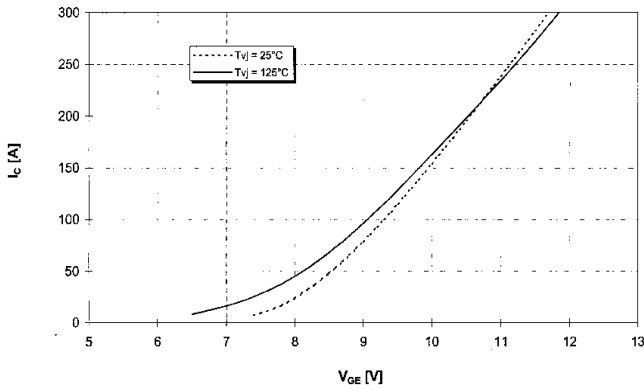
$T_{vj} = 125^\circ C$



Übertragungscharakteristik (typisch)  
Transfer characteristic (typical)

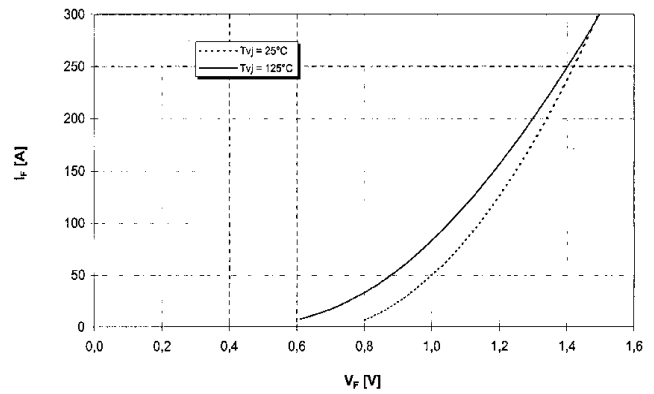
$$I_C = f(V_{GE})$$

$V_{CE} = 20V$



Durchlaßkennlinie der Inversdiode (typisch)  
Forward characteristic of inverse diode (typical)

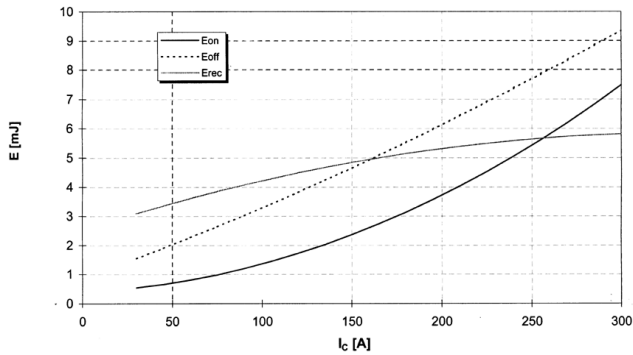
$$I_F = f(V_F)$$



Schaltverluste (typisch)  
Switching losses (typical)

$$E_{on} = f(I_C), E_{off} = f(I_C), E_{rec} = f(I_C)$$

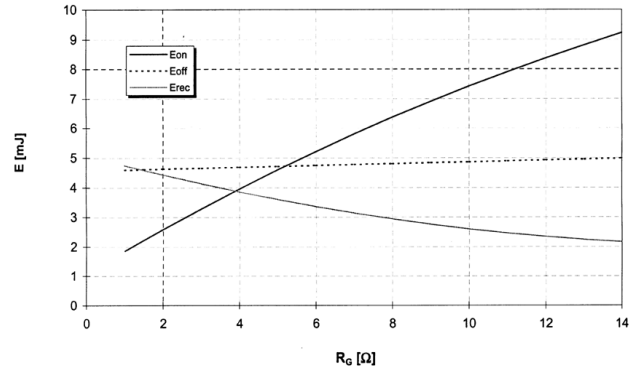
$R_{G, on} = 1.5\Omega, R_{G, off} = 1.5\Omega, V_{CE} = 300V, T_{vj} = 125^\circ C$



Schaltverluste (typisch)  
Switching losses (typical)

$$E_{on} = f(R_G), E_{off} = f(R_G), E_{rec} = f(R_G)$$

$I_C = 150A, V_{CE} = 300V, T_{vj} = 125^\circ C$

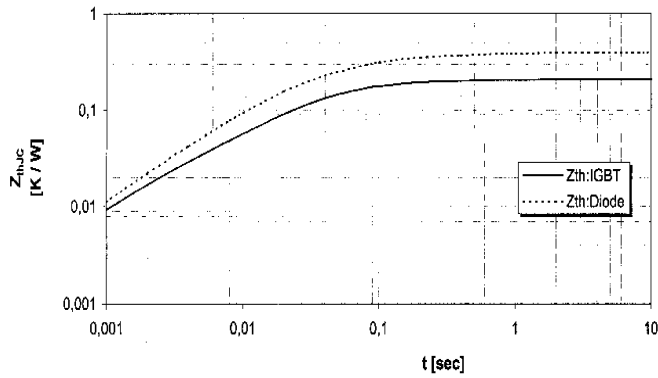


# SII150N06

## NPT IGBT Modules

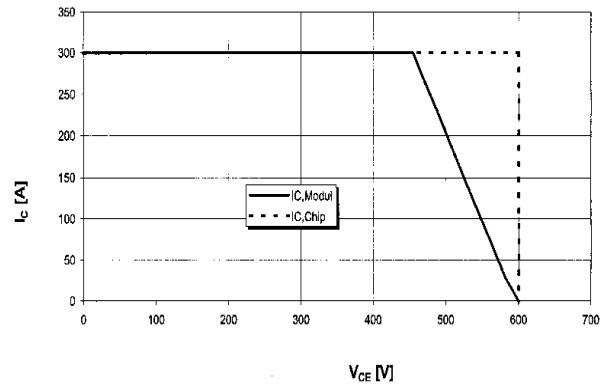
Transienter Wärmewiderstand  
Transient thermal impedance

$$Z_{thJC} = f(t)$$



Sicherer Arbeitsbereich (RBSOA)

Reverse bias safe operation area (RBSOA)  $V_{CE} = +15V, R_{\theta,JC} = 1,5\Omega, T_J = 125^\circ C$



i	1	2	3	4
r <sub>th</sub> [K/kW] : IGBT	8,9	110,0	74,0	17,0
τ <sub>th</sub> [sec] : IGBT	0,0018	0,0240	0,0651	0,6626
r <sub>th</sub> [K/kW] : Diode	141,0	135,2	84,9	38,9
τ <sub>th</sub> [sec] : Diode	0,0487	0,0169	0,1069	0,9115