

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number: FP35R12W2T7B11BOMA1

Manufacturer: Infineon Technologies

Package: Module

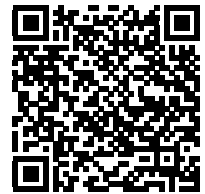
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Product Page:

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Quality & Trust

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Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

Final datasheet

EasyPIM™ module with TRENCHSTOP™ IGBT7 and emitter controlled 7 diode and PressFIT / NTC

Features

- Electrical features
 - $V_{CES} = 1200\text{ V}$
 - $I_{C\text{ nom}} = 35\text{ A} / I_{CRM} = 70\text{ A}$
 - Low $V_{CE,sat}$
 - TRENCHSTOP™ IGBT7
 - Overload operation up to 175°C
 - Suitable Infineon gate drivers can be found under <https://www.infineon.com/gdfinder>
- Mechanical features
 - Al_2O_3 substrate with low thermal resistance
 - Compact design
 - 2.5 kV AC 1 minute insulation
 - High power density
 - PressFIT contact technology



Potential applications

- Motor drives
- Auxiliary inverters
- Air conditioning

Product validation

- Qualified for industrial applications according to the relevant tests of IEC 60747, 60749 and 60068

Description

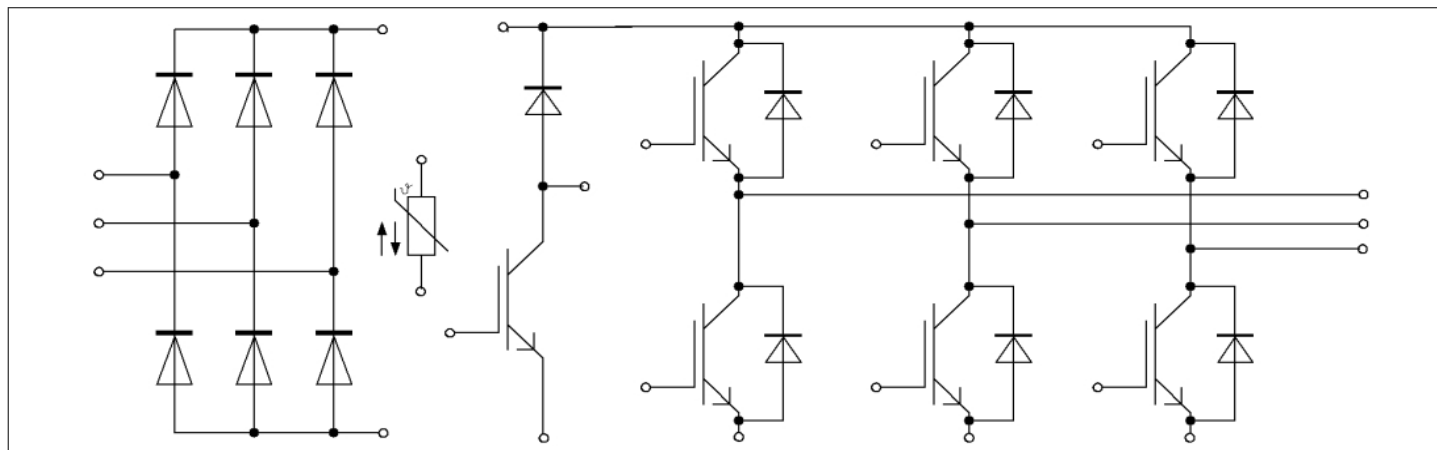


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1 Package

Table 1 Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, $f = 50 \text{ Hz}$, $t = 1 \text{ min}$	2.5	kV
Internal isolation		basic insulation (class 1, IEC 61140)	Al_2O_3	
Comparative tracking index	CTI		> 200	
Relative thermal index (electrical)	RTI	housing	140	°C

Table 2 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Stray inductance module	L_{SCE}			30		nH
Module lead resistance, terminals - chip	$R_{AA'+CC'}$	$T_H = 25 \text{ °C}$, per switch		6		mΩ
Module lead resistance, terminals - chip	$R_{CC'+EE'}$	$T_H = 25 \text{ °C}$, per switch		5		mΩ
Storage temperature	T_{stg}		-40		125	°C
Mounting force per clamp	F		40		80	N
Weight	G			39		g

Note: The current under continuous operation is limited to 25A rms per connector pin.

2 IGBT, Inverter

Table 3 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		$T_{vj} = 25 \text{ °C}$	1200	V
Continuous DC collector current	I_{CDC}	$T_{vj \text{ max}} = 175 \text{ °C}$	$T_H = 105 \text{ °C}$	35	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj \text{ op}}$		70	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 4 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\ sat}$	$I_C = 35\ A, V_{GE} = 15\ V$	$T_{vj} = 25\ ^\circ C$		1.60	1.85	V
			$T_{vj} = 125\ ^\circ C$		1.74		
			$T_{vj} = 175\ ^\circ C$		1.82		
Gate threshold voltage	V_{GETh}	$I_C = 0.75\ mA, V_{CE} = V_{GE}, T_{vj} = 25\ ^\circ C$		5.15	5.8	6.45	V
Gate charge	Q_G	$V_{GE} = \pm 15\ V, V_{CC} = 600\ V, T_{vj} = 25\ ^\circ C$			0.548		μC
Internal gate resistor	R_{Gint}	$T_{vj} = 25\ ^\circ C$			0.0		Ω
Input capacitance	C_{ies}	$f = 100\ kHz, T_{vj} = 25\ ^\circ C, V_{CE} = 25\ V, V_{GE} = 0\ V$			6.62		nF
Reverse transfer capacitance	C_{res}	$f = 100\ kHz, T_{vj} = 25\ ^\circ C, V_{CE} = 25\ V, V_{GE} = 0\ V$			0.023		nF
Collector-emitter cut-off current	I_{CES}	$V_{CE} = 1200\ V, V_{GE} = 0\ V$	$T_{vj} = 25\ ^\circ C$			0.0058	mA
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0\ V, V_{GE} = 20\ V, T_{vj} = 25\ ^\circ C$				100	nA
Turn-on delay time (inductive load)	t_{don}	$I_C = 35\ A, V_{CC} = 600\ V, V_{GE} = \pm 15\ V, R_{Gon} = 5.6\ \Omega$	$T_{vj} = 25\ ^\circ C$		0.037		μs
			$T_{vj} = 125\ ^\circ C$		0.043		
			$T_{vj} = 175\ ^\circ C$		0.044		
Rise time (inductive load)	t_r	$I_C = 35\ A, V_{CC} = 600\ V, V_{GE} = \pm 15\ V, R_{Gon} = 5.6\ \Omega$	$T_{vj} = 25\ ^\circ C$		0.035		μs
			$T_{vj} = 125\ ^\circ C$		0.037		
			$T_{vj} = 175\ ^\circ C$		0.038		
Turn-off delay time (inductive load)	t_{doff}	$I_C = 35\ A, V_{CC} = 600\ V, V_{GE} = \pm 15\ V, R_{Goff} = 5.6\ \Omega$	$T_{vj} = 25\ ^\circ C$		0.260		μs
			$T_{vj} = 125\ ^\circ C$		0.320		
			$T_{vj} = 175\ ^\circ C$		0.340		
Fall time (inductive load)	t_f	$I_C = 35\ A, V_{CC} = 600\ V, V_{GE} = \pm 15\ V, R_{Goff} = 5.6\ \Omega$	$T_{vj} = 25\ ^\circ C$		0.140		μs
			$T_{vj} = 125\ ^\circ C$		0.240		
			$T_{vj} = 175\ ^\circ C$		0.300		
Turn-on energy loss per pulse	E_{on}	$I_C = 35\ A, V_{CC} = 600\ V, L_\sigma = 35\ nH, V_{GE} = \pm 15\ V, R_{Gon} = 5.6\ \Omega, di/dt = 700\ A/\mu s (T_{vj} = 175\ ^\circ C)$	$T_{vj} = 25\ ^\circ C$		2.62		mJ
			$T_{vj} = 125\ ^\circ C$		3.73		
			$T_{vj} = 175\ ^\circ C$		4.45		
Turn-off energy loss per pulse	E_{off}	$I_C = 35\ A, V_{CC} = 600\ V, L_\sigma = 35\ nH, V_{GE} = \pm 15\ V, R_{Goff} = 5.6\ \Omega, dv/dt = 3300\ V/\mu s (T_{vj} = 175\ ^\circ C)$	$T_{vj} = 25\ ^\circ C$		2.39		mJ
			$T_{vj} = 125\ ^\circ C$		3.73		
			$T_{vj} = 175\ ^\circ C$		4.56		

(table continues...)

Table 4 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
SC data	I_{SC}	$V_{GE} \leq 15 \text{ V}$, $V_{CC} = 800 \text{ V}$, $V_{CEmax} = V_{CES} - L_{SCE} \cdot di/dt$		110		A
				100		
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, $\lambda_{grease} = 4.3 \text{ W/(m} \cdot \text{K)}$		0.931		K/W
Temperature under switching conditions	$T_{vj\text{ op}}$		-40		175	°C

Note: $T_{vj\text{ op}} > 150^\circ\text{C}$ is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.

3 Diode, Inverter

Table 5 Maximum rated values

Parameter	Symbol	Note or test condition	Values	Unit
Repetitive peak reverse voltage	V_{RRM}	$T_{vj} = 25^\circ\text{C}$	1200	V
Continuous DC forward current	I_F		35	A
Repetitive peak forward current	I_{FRM}	$t_P = 1 \text{ ms}$	70	A
I^2t - value	I^2t	$t_P = 10 \text{ ms}$, $V_R = 0 \text{ V}$	$T_{vj} = 125^\circ\text{C}$	A^2s
			$T_{vj} = 175^\circ\text{C}$	

Table 6 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 35 \text{ A}$, $V_{GE} = 0 \text{ V}$	$T_{vj} = 25^\circ\text{C}$	1.72	2.10	V
			$T_{vj} = 125^\circ\text{C}$	1.59		
			$T_{vj} = 175^\circ\text{C}$	1.52		
Peak reverse recovery current	I_{RM}	$V_{CC} = 600 \text{ V}$, $I_F = 35 \text{ A}$, $V_{GE} = -15 \text{ V}$, $-di_F/dt = 700 \text{ A}/\mu\text{s}$ ($T_{vj} = 175^\circ\text{C}$)	$T_{vj} = 25^\circ\text{C}$	22.4		A
			$T_{vj} = 125^\circ\text{C}$	29.6		
			$T_{vj} = 175^\circ\text{C}$	34		

(table continues...)

Table 6 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Recovered charge	Q_r	$V_{CC} = 600\text{ V}$, $I_F = 35\text{ A}$, $V_{GE} = -15\text{ V}$, $-di_F/dt = 700\text{ A}/\mu\text{s}$ ($T_{vj} = 175\text{ °C}$)	$T_{vj} = 25\text{ °C}$	2.46		μC
			$T_{vj} = 125\text{ °C}$	4.8		
			$T_{vj} = 175\text{ °C}$	6.52		
Reverse recovery energy	E_{rec}	$V_{CC} = 600\text{ V}$, $I_F = 35\text{ A}$, $V_{GE} = -15\text{ V}$, $-di_F/dt = 700\text{ A}/\mu\text{s}$ ($T_{vj} = 175\text{ °C}$)	$T_{vj} = 25\text{ °C}$	1.12		mJ
			$T_{vj} = 125\text{ °C}$	2.02		
			$T_{vj} = 175\text{ °C}$	2.63		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, $\lambda_{grease} = 4.3\text{ W}/(\text{m}\cdot\text{K})$		1.34		K/W
Temperature under switching conditions	$T_{vj\text{ op}}$		-40		175	°C

Note: $T_{vj\text{ op}} > 150\text{ °C}$ is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.

4 Diode, Rectifier

Table 7 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		$T_{vj} = 25\text{ °C}$	1600	V
Maximum RMS forward current per chip	I_{FRMSM}	$T_H = 100\text{ °C}$		45	A
Maximum RMS current at rectifier output	I_{RMSM}	$T_H = 100\text{ °C}$		50	A
Surge forward current	I_{FSM}	$t_p = 10\text{ ms}$	$T_{vj} = 25\text{ °C}$	450	A
			$T_{vj} = 150\text{ °C}$	370	
I^2t - value	I^2t	$t_p = 10\text{ ms}$	$T_{vj} = 25\text{ °C}$	1010	A^2s
			$T_{vj} = 150\text{ °C}$	685	

Table 8 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 35\text{ A}$ $T_{vj} = 150\text{ °C}$		0.95		V
Reverse current	I_r	$T_{vj} = 150\text{ °C}$, $V_R = 1600\text{ V}$		1		mA
Thermal resistance, junction to heat sink	R_{thJH}	per diode, $\lambda_{grease} = 4.3\text{ W}/(\text{m}\cdot\text{K})$		1.18		K/W

(table continues...)

Table 8 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Temperature under switching conditions	$T_{vj, op}$		-40		150	°C

5 IGBT, Brake-Chopper

Table 9 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		$T_{vj} = 25\text{ °C}$	1200	V
Continuous DC collector current	I_{CDC}	$T_{vj\ max} = 175\text{ °C}$	$T_H = 105\text{ °C}$	35	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj\ op}$		70	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 10 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\ sat}$	$I_C = 35\text{ A}, V_{GE} = 15\text{ V}$	$T_{vj} = 25\text{ °C}$		1.60	1.85	V
			$T_{vj} = 125\text{ °C}$		1.74		
			$T_{vj} = 175\text{ °C}$		1.82		
Gate threshold voltage	V_{GETh}	$I_C = 0.75\text{ mA}, V_{CE} = V_{GE}, T_{vj} = 25\text{ °C}$		5.15	5.8	6.45	V
Gate charge	Q_G	$V_{GE} = \pm 15\text{ V}, V_{CC} = 600\text{ V}, T_{vj} = 25\text{ °C}$			0.548		μC
Internal gate resistor	R_{Gint}	$T_{vj} = 25\text{ °C}$			0.0		Ω
Input capacitance	C_{ies}	$f = 100\text{ kHz}, T_{vj} = 25\text{ °C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$			6.62		nF
Reverse transfer capacitance	C_{res}	$f = 100\text{ kHz}, T_{vj} = 25\text{ °C}, V_{CE} = 25\text{ V}, V_{GE} = 0\text{ V}$			0.023		nF
Collector-emitter cut-off current	I_{CES}	$V_{CE} = 1200\text{ V}, V_{GE} = 0\text{ V}$	$T_{vj} = 25\text{ °C}$			0.0039	mA
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}, T_{vj} = 25\text{ °C}$				100	nA
Turn-on delay time (inductive load)	t_{don}	$I_C = 35\text{ A}, V_{CC} = 600\text{ V}, V_{GE} = \pm 15\text{ V}, R_{Gon} = 5.6\text{ Ω}$	$T_{vj} = 25\text{ °C}$		0.035		μs
			$T_{vj} = 125\text{ °C}$		0.041		
			$T_{vj} = 175\text{ °C}$		0.043		

(table continues...)

Table 10 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Rise time (inductive load)	t_r	$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Gon} = 5.6 \Omega$	$T_{vj} = 25 \text{ °C}$	0.037		μs
			$T_{vj} = 125 \text{ °C}$	0.038		
			$T_{vj} = 175 \text{ °C}$	0.041		
Turn-off delay time (inductive load)	t_{doff}	$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Goff} = 5.6 \Omega$	$T_{vj} = 25 \text{ °C}$	0.250		μs
			$T_{vj} = 125 \text{ °C}$	0.310		
			$T_{vj} = 175 \text{ °C}$	0.330		
Fall time (inductive load)	t_f	$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Goff} = 5.6 \Omega$	$T_{vj} = 25 \text{ °C}$	0.110		μs
			$T_{vj} = 125 \text{ °C}$	0.210		
			$T_{vj} = 175 \text{ °C}$	0.270		
Turn-on energy loss per pulse	E_{on}	$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $L_\sigma = 35 \text{ nH}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Gon} = 5.6 \Omega$, $di/dt = 700 \text{ A}/\mu\text{s}$ ($T_{vj} = 175 \text{ °C}$)	$T_{vj} = 25 \text{ °C}$	2.53		mJ
			$T_{vj} = 125 \text{ °C}$	3.47		
			$T_{vj} = 175 \text{ °C}$	4.21		
Turn-off energy loss per pulse	E_{off}	$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $L_\sigma = 35 \text{ nH}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Goff} = 5.6 \Omega$, $dv/dt = 3300 \text{ V}/\mu\text{s}$ ($T_{vj} = 175 \text{ °C}$)	$T_{vj} = 25 \text{ °C}$	2.41		mJ
			$T_{vj} = 125 \text{ °C}$	3.74		
			$T_{vj} = 175 \text{ °C}$	4.58		
SC data	I_{SC}	$V_{GE} \leq 15 \text{ V}$, $V_{CC} = 800 \text{ V}$, $V_{CEmax} = V_{CES} - L_{sCE} \cdot di/dt$	$t_p \leq 8 \mu\text{s}$, $T_{vj} = 150 \text{ °C}$	110		A
			$t_p \leq 7 \mu\text{s}$, $T_{vj} = 175 \text{ °C}$	100		
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, $\lambda_{grease} = 4.3 \text{ W}/(\text{m} \cdot \text{K})$		0.938		K/W
Temperature under switching conditions	$T_{vj op}$		-40		175	°C

Note: $T_{vj op} > 150 \text{ °C}$ is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.

6 Diode, Brake-Chopper

Table 11 Maximum rated values

Parameter	Symbol	Note or test condition	Values	Unit
Repetitive peak reverse voltage	V_{RRM}	$T_{vj} = 25 \text{ °C}$	1200	V
Continuous DC forward current	I_F		10	A

(table continues...)

Table 11 (continued) Maximum rated values

Parameter	Symbol	Note or test condition	Values	Unit
Repetitive peak forward current	I_{FRM}	$t_P = 1 \text{ ms}$	20	A
I^2t - value	I^2t	$t_P = 10 \text{ ms}, V_R = 0 \text{ V}$	$T_{vj} = 125 \text{ °C}$	A^2s
			$T_{vj} = 175 \text{ °C}$	

Table 12 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	$I_F = 10 \text{ A}, V_{GE} = 0 \text{ V}$	$T_{vj} = 25 \text{ °C}$	1.72	2.10	V
			$T_{vj} = 125 \text{ °C}$	1.59		
			$T_{vj} = 175 \text{ °C}$	1.52		
Peak reverse recovery current	I_{RM}	$V_{CC} = 600 \text{ V}, I_F = 10 \text{ A}, V_{GE} = -15 \text{ V}, -di_F/dt = 500 \text{ A}/\mu\text{s} (T_{vj} = 175 \text{ °C})$	$T_{vj} = 25 \text{ °C}$	9.83		A
			$T_{vj} = 125 \text{ °C}$	14.7		
			$T_{vj} = 175 \text{ °C}$	16.1		
Recovered charge	Q_r	$V_{CC} = 600 \text{ V}, I_F = 10 \text{ A}, V_{GE} = -15 \text{ V}, -di_F/dt = 500 \text{ A}/\mu\text{s} (T_{vj} = 175 \text{ °C})$	$T_{vj} = 25 \text{ °C}$	0.93		μC
			$T_{vj} = 125 \text{ °C}$	1.66		
			$T_{vj} = 175 \text{ °C}$	2.13		
Reverse recovery energy	E_{rec}	$V_{CC} = 600 \text{ V}, I_F = 10 \text{ A}, V_{GE} = -15 \text{ V}, -di_F/dt = 500 \text{ A}/\mu\text{s} (T_{vj} = 175 \text{ °C})$	$T_{vj} = 25 \text{ °C}$	0.26		mJ
			$T_{vj} = 125 \text{ °C}$	0.51		
			$T_{vj} = 175 \text{ °C}$	0.73		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, $\lambda_{grease} = 4.3 \text{ W}/(\text{m}\cdot\text{K})$		2.34		K/W
Temperature under switching conditions	$T_{vj\text{op}}$		-40		175	°C

Note: $T_{vj\text{op}} > 150 \text{ °C}$ is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.

7 NTC-Thermistor

Table 13 Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Rated resistance	R_{25}	$T_{NTC} = 25 \text{ °C}$		5		kΩ
Deviation of R_{100}	$\Delta R/R$	$T_{NTC} = 100 \text{ °C}, R_{100} = 493 \text{ Ω}$	-5		5	%
Power dissipation	P_{25}	$T_{NTC} = 25 \text{ °C}$			20	mW

(table continues...)

Table 13 (continued) Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
B-value	$B_{25/50}$	$R_2 = R_{25} \exp[B_{25/50}(1/T_2 - 1/(298,15 \text{ K}))]$		3375		K
B-value	$B_{25/80}$	$R_2 = R_{25} \exp[B_{25/80}(1/T_2 - 1/(298,15 \text{ K}))]$		3411		K
B-value	$B_{25/100}$	$R_2 = R_{25} \exp[B_{25/100}(1/T_2 - 1/(298,15 \text{ K}))]$		3433		K

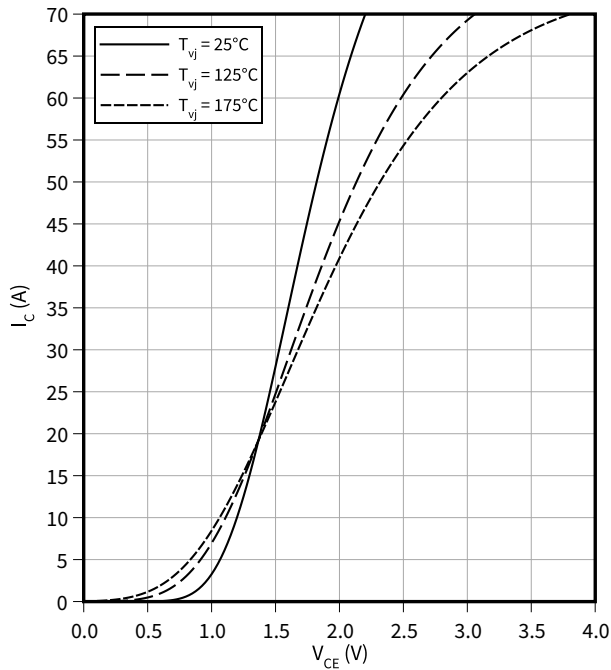
Note: For an analytical description of the NTC characteristics please refer to AN2009-10, chapter 4.

8 Characteristics diagrams

Output characteristic (typical), IGBT, Inverter

$I_C = f(V_{CE})$

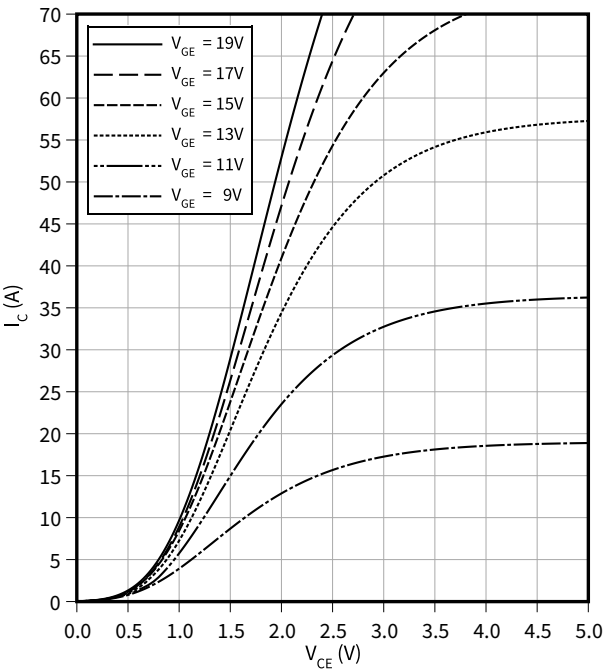
$V_{GE} = 15\text{ V}$



Output characteristic field (typical), IGBT, Inverter

$I_C = f(V_{CE})$

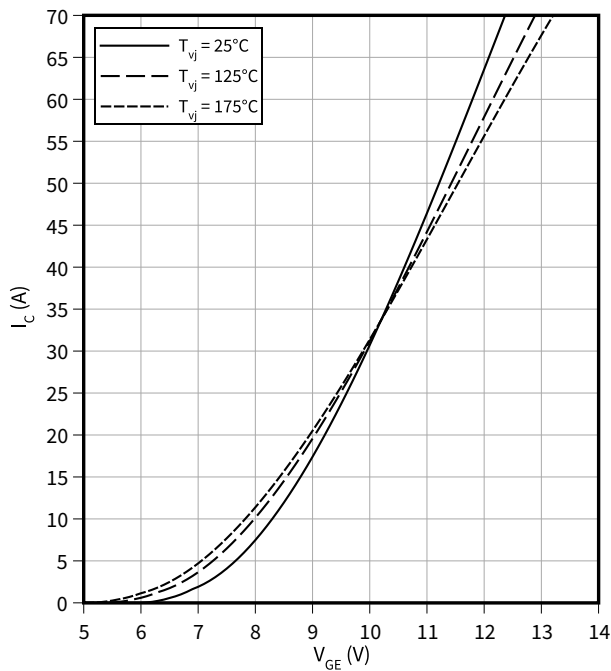
$T_{vj} = 175\text{ °C}$



Transfer characteristic (typical), IGBT, Inverter

$I_C = f(V_{GE})$

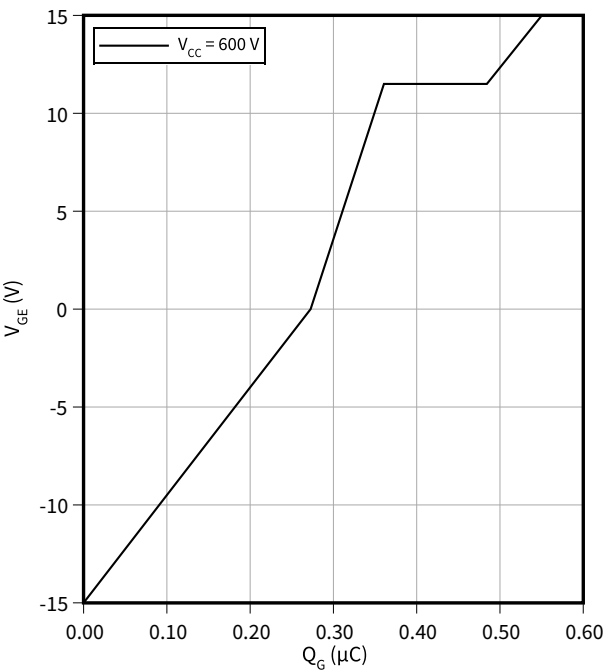
$V_{CE} = 20\text{ V}$



Gate charge characteristic (typical), IGBT, Inverter

$V_{GE} = f(Q_G)$

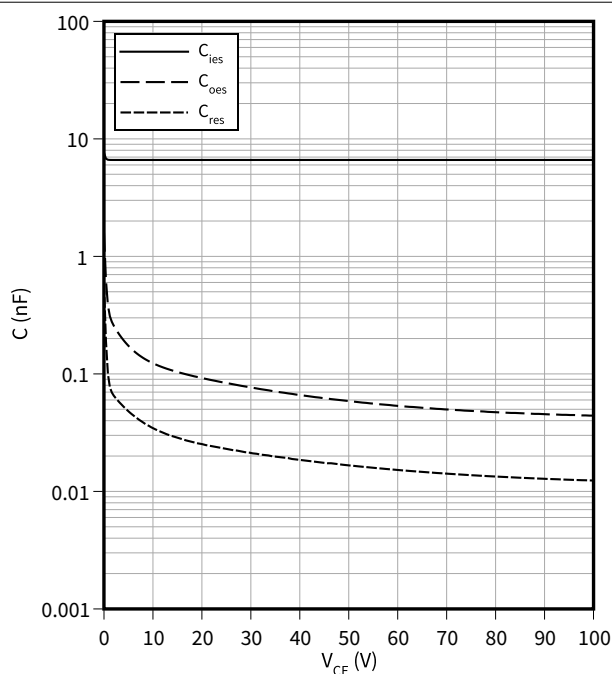
$I_C = 35\text{ A}, T_{vj} = 25\text{ °C}$



Capacity characteristic (typical), IGBT, Inverter

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

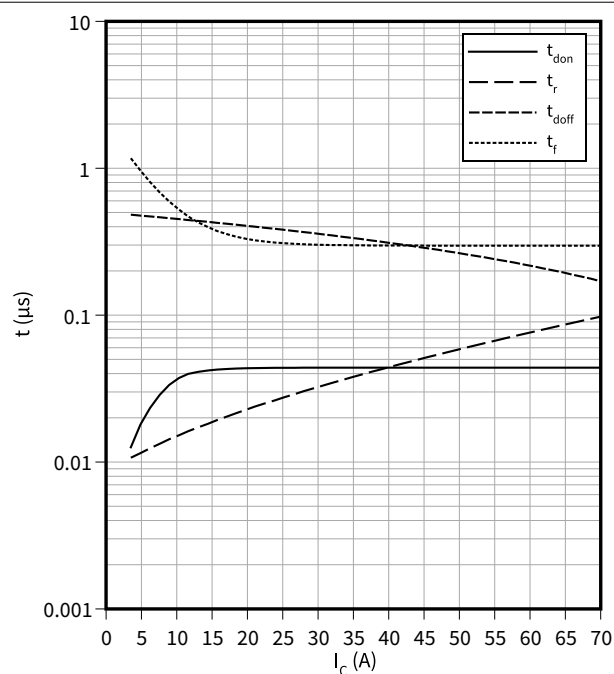
$f = 100 \text{ kHz}$, $V_{GE} = 0 \text{ V}$, $T_{vj} = 25 \text{ °C}$



Switching times (typical), IGBT, Inverter

$$t = f(I_C)$$

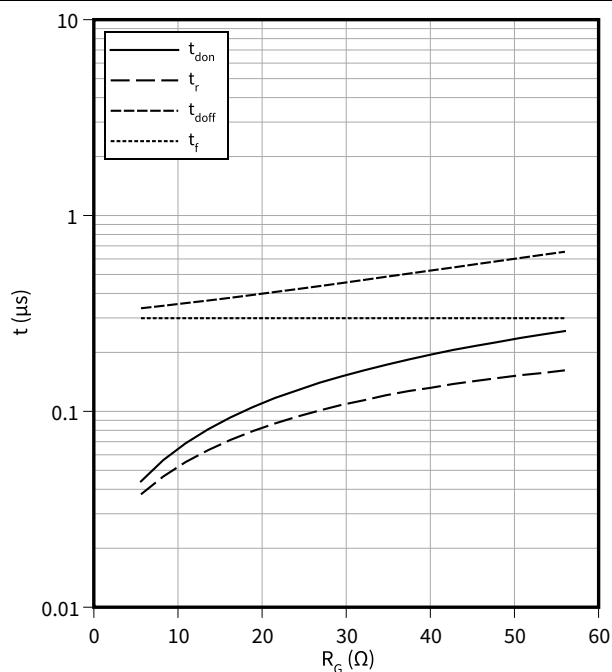
$R_{Goff} = 5.6 \text{ } \Omega$, $R_{Gon} = 5.6 \text{ } \Omega$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $T_{vj} = 175 \text{ °C}$



Switching times (typical), IGBT, Inverter

$$t = f(R_G)$$

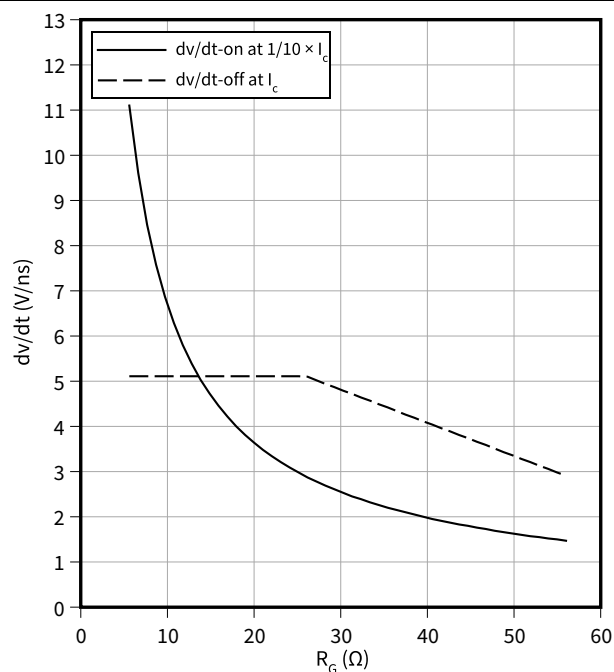
$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $T_{vj} = 175 \text{ °C}$



Voltage slope (typical), IGBT, Inverter

$$dv/dt = f(R_G)$$

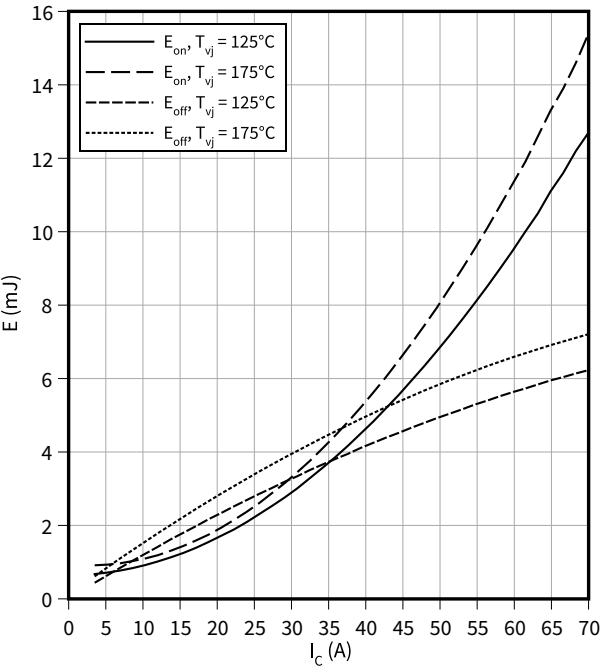
$I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $T_{vj} = 25 \text{ °C}$



8 Characteristics diagrams

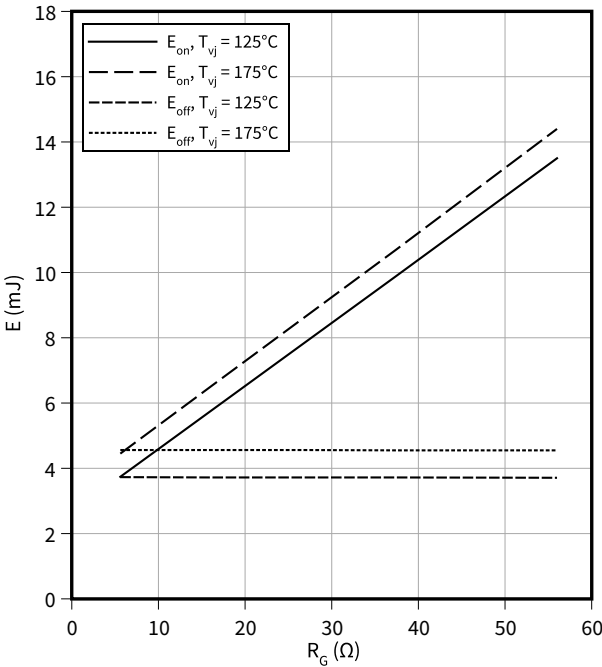
Switching losses (typical), IGBT, Inverter

$E = f(I_C)$
 $R_{Goff} = 5.6 \Omega$, $V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$, $R_{Gon} = 5.6 \Omega$



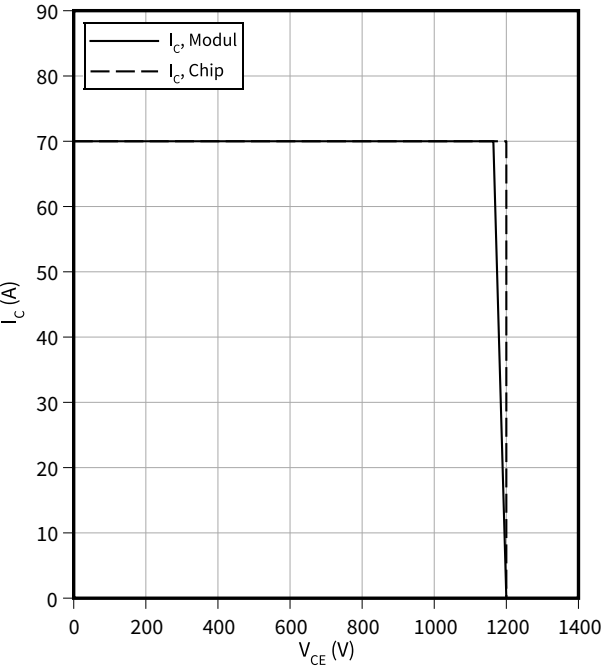
Switching losses (typical), IGBT, Inverter

$E = f(R_G)$
 $V_{GE} = \pm 15 \text{ V}$, $I_C = 35 \text{ A}$, $V_{CC} = 600 \text{ V}$



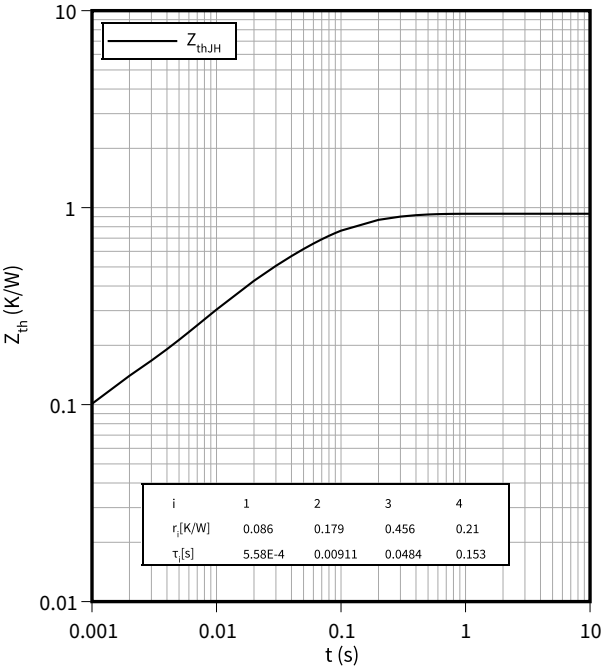
Reverse bias safe operating area (RBSOA), IGBT, Inverter

$I_C = f(V_{CE})$
 $R_{Goff} = 5.6 \Omega$, $V_{GE} = \pm 15 \text{ V}$, $T_{vj} = 175 \text{ °C}$



Transient thermal impedance, IGBT, Inverter

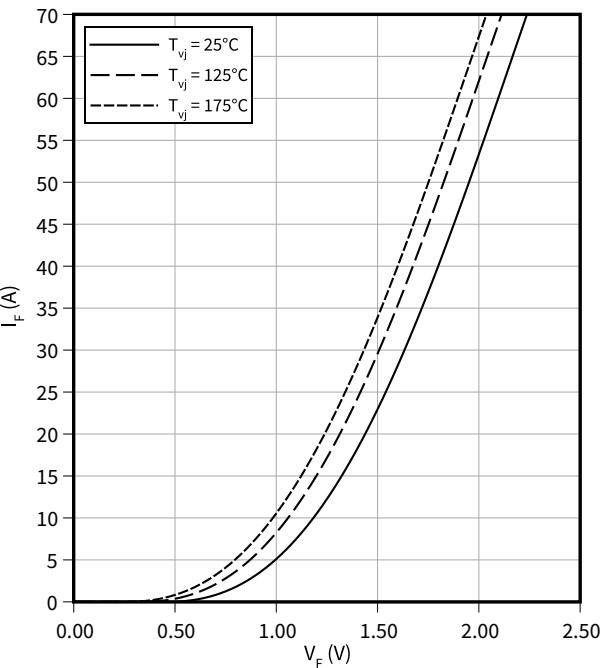
$Z_{th} = f(t)$



8 Characteristics diagrams

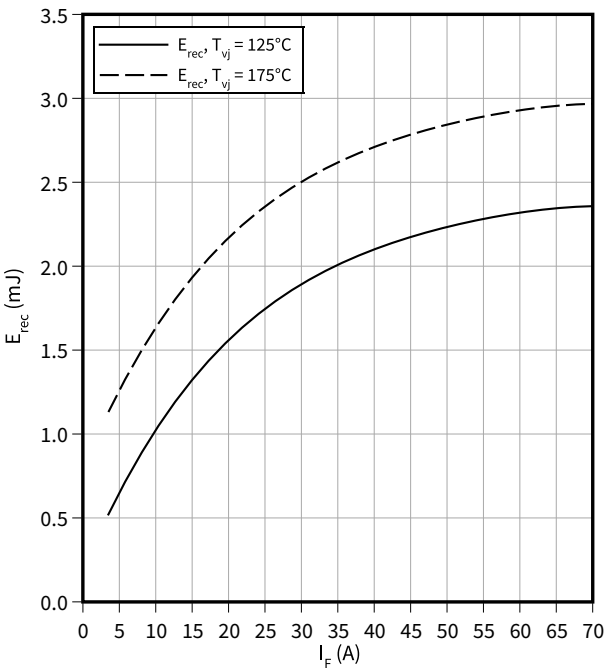
Forward characteristic (typical), Diode, Inverter

$I_F = f(V_F)$



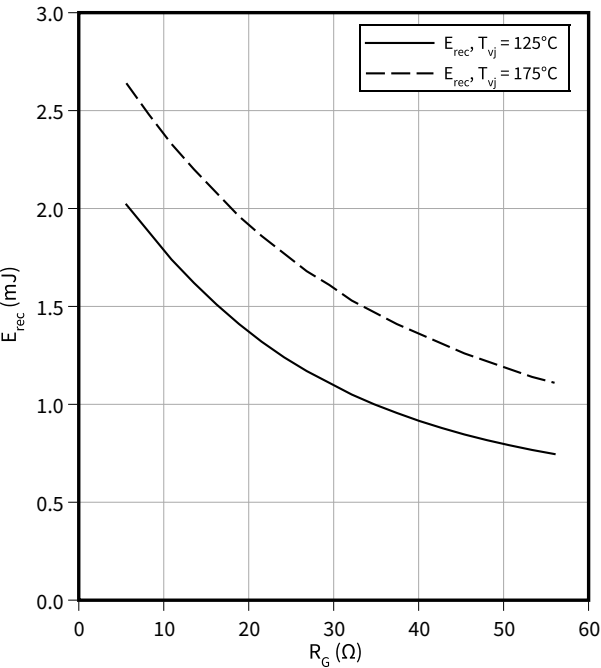
Switching losses (typical), Diode, Inverter

$E_{rec} = f(I_F)$
 $R_{Gon} = 5.6\ \Omega, V_{CC} = 600\ \text{V}$



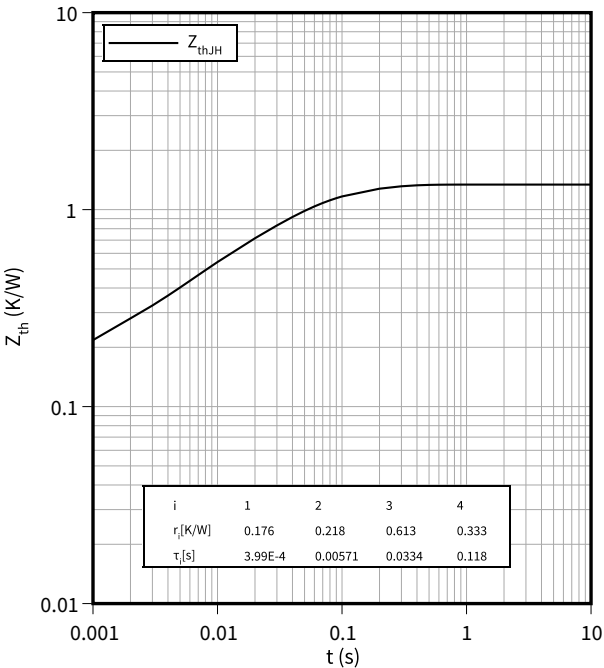
Switching losses (typical), Diode, Inverter

$E_{rec} = f(R_G)$
 $I_F = 35\ \text{A}, V_{CC} = 600\ \text{V}$



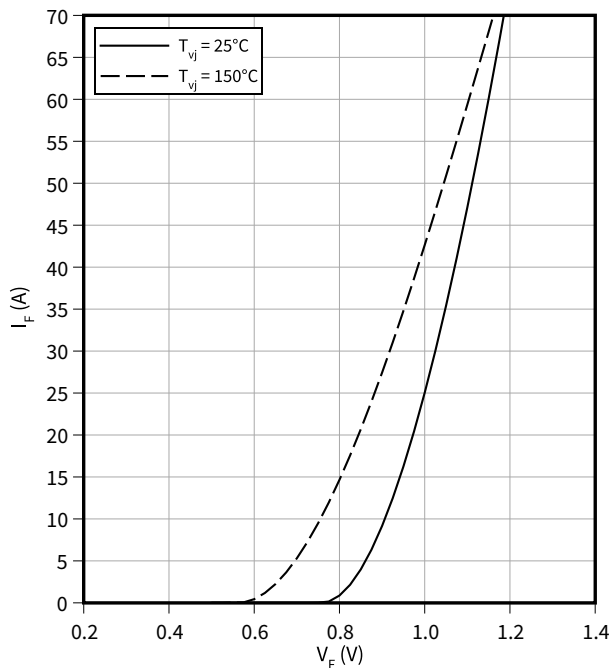
Transient thermal impedance, Diode, Inverter

$Z_{th} = f(t)$



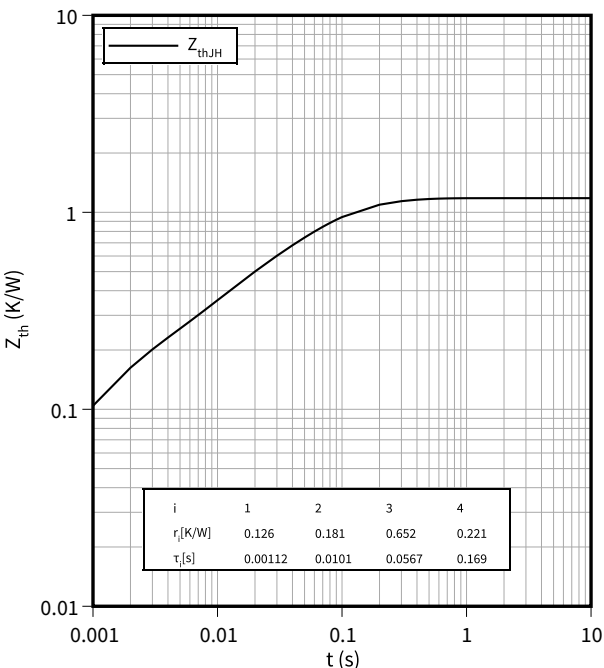
Forward characteristic (typical), Diode, Rectifier

$I_F = f(V_F)$



Transient thermal impedance, Diode, Rectifier

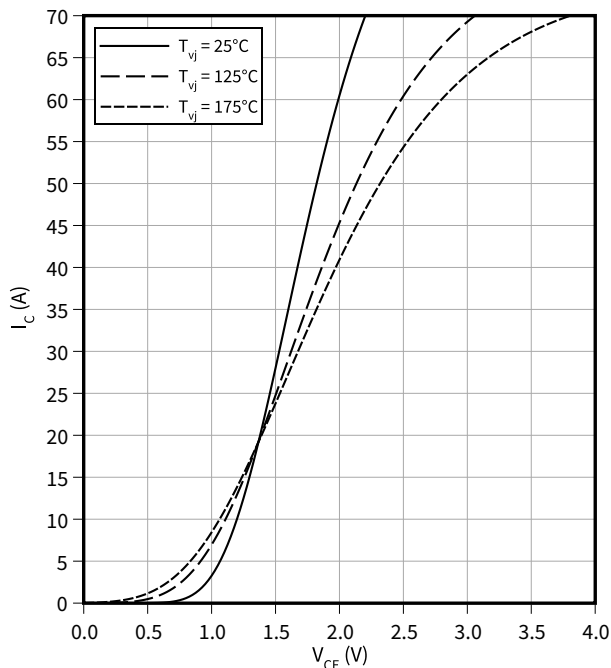
$Z_{th} = f(t)$



Output characteristic (typical), IGBT, Brake-Chopper

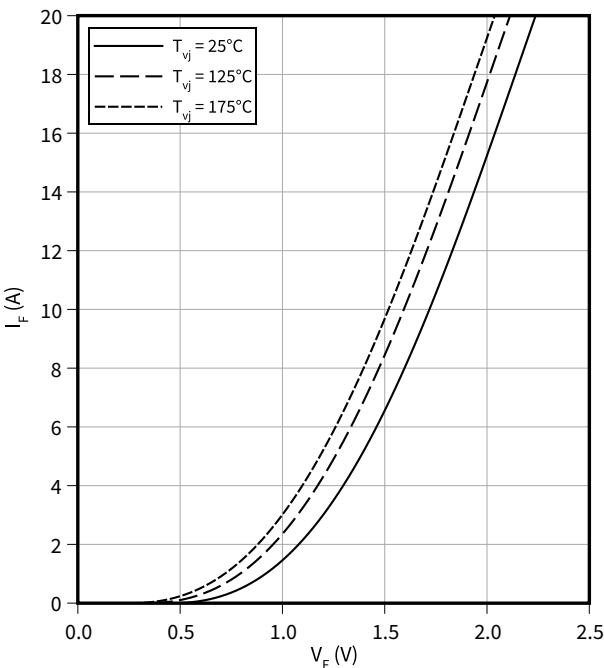
$I_C = f(V_{CE})$

$V_{GE} = 15\text{ V}$



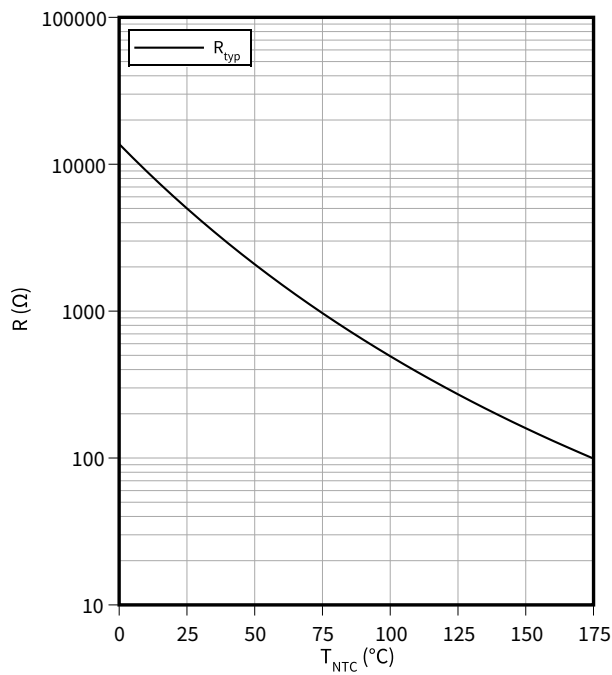
Forward characteristic (typical), Diode, Brake-Chopper

$I_F = f(V_F)$



Temperature characteristic (typical), NTC-Thermistor

$R = f(T_{NTC})$



9 Circuit diagram

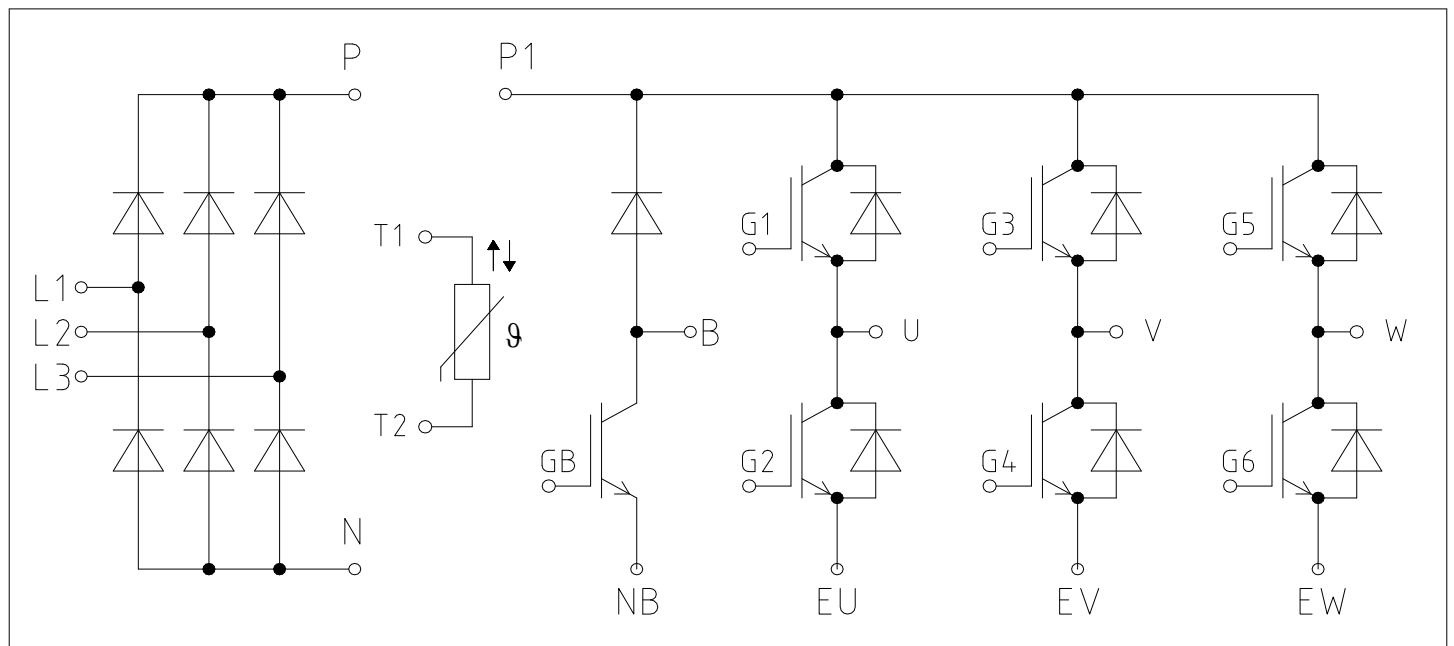


Figure 1

10 Package outlines

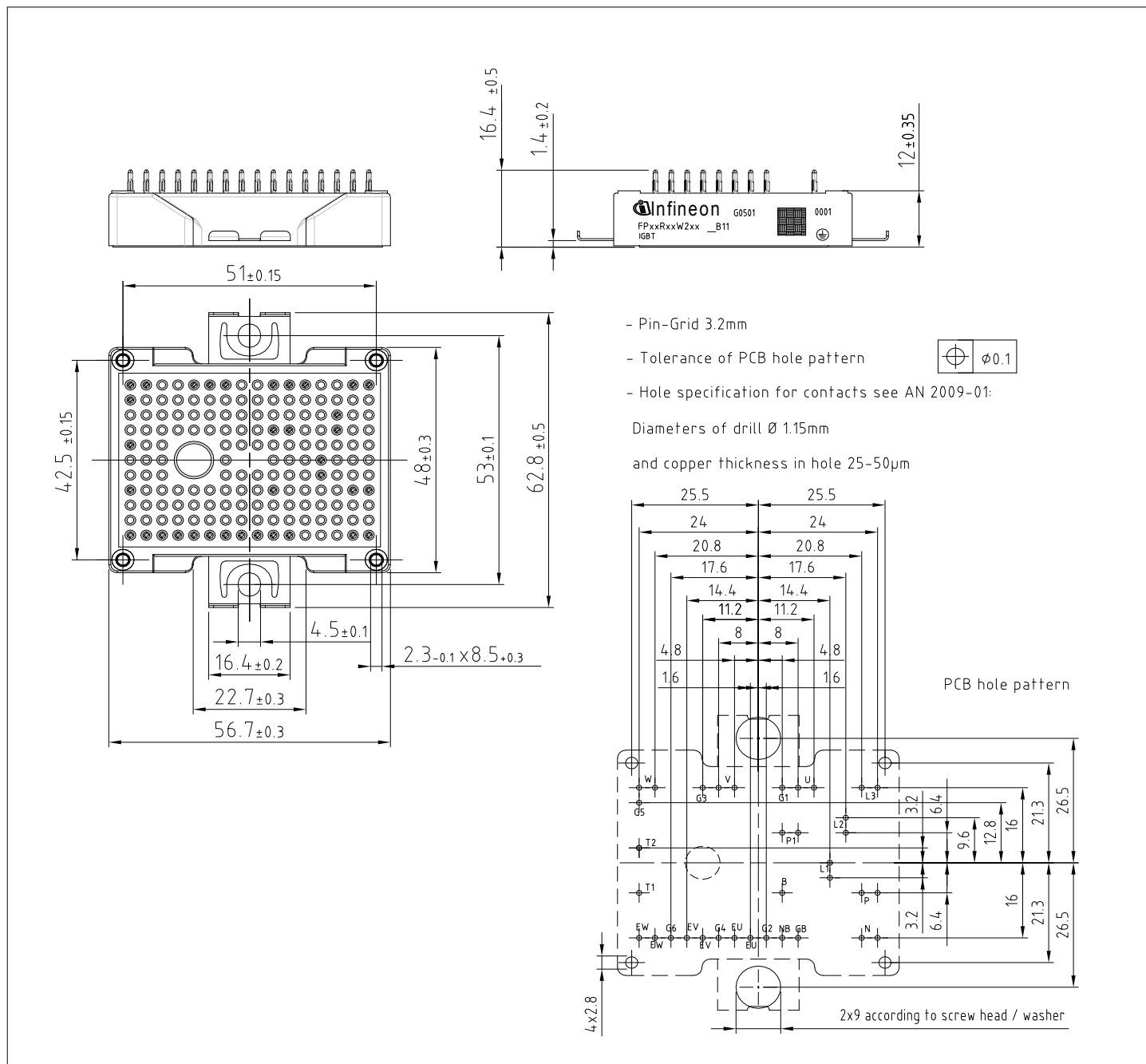


Figure 2

11 Module label code

Module label code			
Code format	Data Matrix		Barcode Code128
Encoding	ASCII text		Code Set A
Symbol size	16x16		23 digits
Standard	IEC24720 and IEC16022		IEC8859-1
Code content	<i>Content</i>	<i>Digit</i>	<i>Example</i>
	Module serial number	1 – 5	71549
	Module material number	6 - 11	142846
	Production order number	12 - 19	55054991
	Date code (production year)	20 – 21	15
	Date code (production week)	22 – 23	30
Example			
			
71549142846550549911530		71549142846550549911530	

Figure 3

Revision history

Document revision	Date of release	Description of changes
V1.0	2017-06-09	Target datasheet
V2.0	2020-02-25	Preliminary datasheet
n/a	2020-09-01	Datasheet migrated to a new system with a new layout and new revision number schema: target or preliminary datasheet = 0.xy; final datasheet = 1.xy
1.00	2025-07-18	Final datasheet

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