



Vincotech

10-FZ073BA030SM07-M575L308

datasheet

flowBOOST 0 triple

650 V / 30 A

Topology features

- Kelvin Emitter for improved switching performance
- Integrated DC capacitor
- Temperature sensor
- Triple Booster

Component features

- High efficiency in hard switching and resonant topologies
- High speed switching
- Low gate charge

Housing features

- Base isolation: Al_2O_3
- Clip-in, reliable mechanical connection, qualified for wave soldering
- Convex shaped substrate for superior thermal contact
- Thermo-mechanical push-and-pull force relief
- Solder pin

Target applications

- Charging Stations
- Power Supply
- Solar Inverters
- UPS

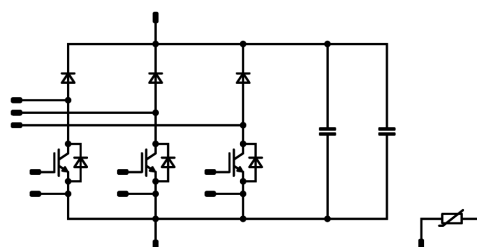
Types

- 10-FZ073BA030SM07-M575L308

flow 0 12 mm housing



Schematic





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Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
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Boost Switch

Collector-emitter voltage	V_{CES}		650	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	32	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	90	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	60	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	25	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	70	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 8,3\text{ ms}$ $T_j = 150\text{ °C}$	50	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	56	W
Maximum junction temperature	T_{jmax}		175	°C

Boost Sw. Protection Diode

Peak repetitive reverse voltage	V_{RRM}		1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	42	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	200	A
Surge current capability	I^2t		200	A²s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	71	W
Maximum junction temperature	T_{jmax}		175	°C

Capacitor (DC)

Maximum DC voltage	V_{MAX}		630	V
Operation Temperature	T_{op}		-55 ... 150	°C



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Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
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Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	°C
Operation temperature under switching condition	T_{jop}		-40...+(T_{jmax} - 25)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage* $t_p = 2\text{ s}$	6000	V
Creepage distance			>12,7	mm
Clearance			>12,7	mm
Comparative Tracking Index	CTI		≥ 200	

*100 % tested in production



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Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	

Boost Switch

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0003	25	3,3	4	4,7	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		30	25 125 150		1,67 1,8 1,84	2,22 ⁽¹⁾	V
Collector-emitter cut-off current	I_{CES}		0	650		25			40	μA
Gate-emitter leakage current	I_{GES}		20	0		25			120	nA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}	$f = 1 \text{ Mhz}$	0	25		25		1800		pF
Output capacitance	C_{oes}							45		pF
Reverse transfer capacitance	C_{res}							7		pF
Gate charge	Q_g	$V_{CC} = 520 \text{ V}$	15		30	25		70		nC

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2 \text{ W/mK}$ (PTM)						1,57		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 16 \Omega$ $R_{goff} = 16 \Omega$	0/15	400	30	25 125 150		21,18 20,22 19,99		ns
Rise time	t_r					25 125 150		8,69 10,04 10,51		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		132,85 149,53 153,9		ns
Fall time	t_f					25 125 150		4,15 10,81 11,81		ns
Turn-on energy (per pulse)	E_{on}					25 125 150		0,263 0,296 0,308		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		0,176 0,277 0,306		mWs



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Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	

Boost Diode

Static

Forward voltage	V_F				16	25 125 150		1,45 1,6 1,68	1,55 ⁽¹⁾	V
Reverse leakage current	I_R	$V_r = 650$ V				25 150		3,2 48	320	μA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2$ W/mK (PTM)						1,69		K/W
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Dynamic

Peak recovery current	I_{RM}	$di/dt=3543$ A/μs $di/dt=2760$ A/μs $di/dt=2826$ A/μs	0/15	400	30	25 125 150		11,81 10,67 10,29		A
Reverse recovery time	t_{rr}					25 125 150		9,7 10,12 10,17		ns
Recovered charge	Q_r					25 125 150		0,068 0,063 0,062		μC
Reverse recovered energy	E_{rec}					25 125 150		0,011 0,01 0,01		mWs
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					25 125 150		2729,37 2340,87 2368,91		A/μs



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Characteristic Values

Parameter	Symbol	Conditions						Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]		Min	Typ	Max	

Boost Sw. Protection Diode

Static

Forward voltage	V_F				18	25 125 150		1,19 1,18 1,16	1,5 ⁽¹⁾		V
Reverse leakage current	I_R	$V_i = 1600$ V				25 150				50 1000	µA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2$ W/mK (PTM)						1,34			K/W
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Capacitor (DC)

Static

Capacitance	C	DC bias voltage = 0 V				25		33			nF
Tolerance							-5		5		%

Thermistor

Static

Rated resistance	R					25		22			kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1484$ Ω				100	-5		5		%
Power dissipation	P					25		130			mW
Power dissipation constant	d					25		1,5			mW/K
B-value	$B_{(25/50)}$	Tol. ±1 %						3962			K
B-value	$B_{(25/100)}$	Tol. ±1 %						4000			K
Vincotech Thermistor Reference									I		

⁽¹⁾ Value at chip level

⁽²⁾ Only valid with pre-applied Vincotech thermal interface material.



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Boost Switch Characteristics

figure 1. IGBT

Typical output characteristics

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

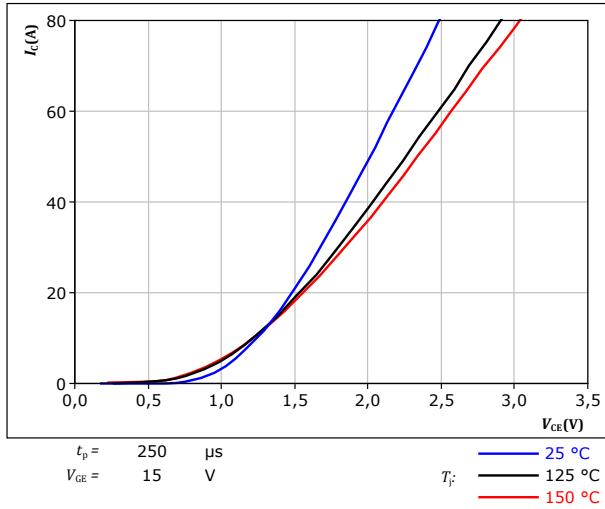


figure 2. IGBT

Typical output characteristics

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

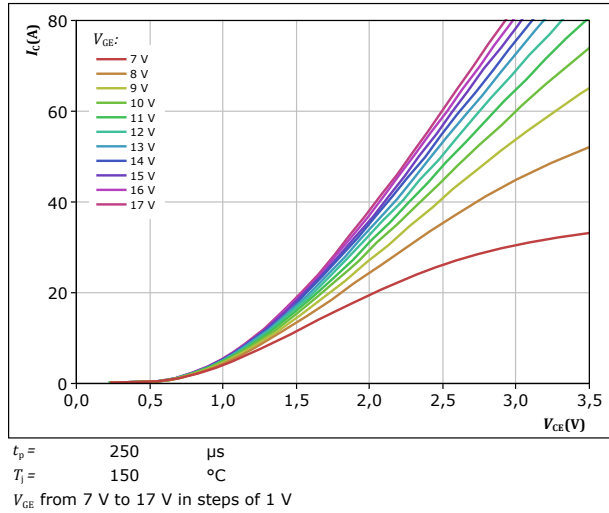


figure 3. IGBT

Typical transfer characteristics

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

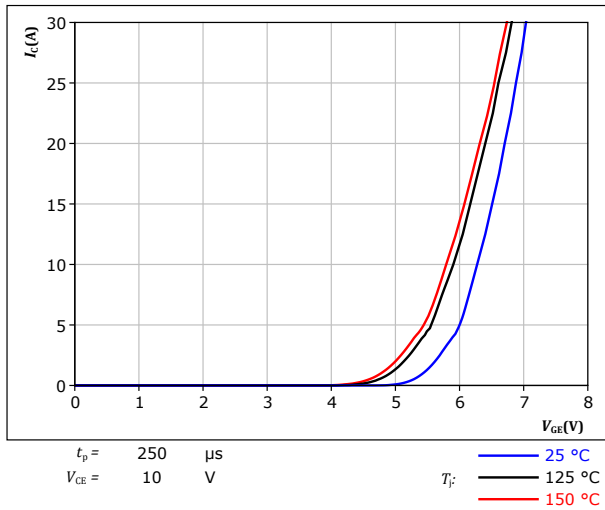
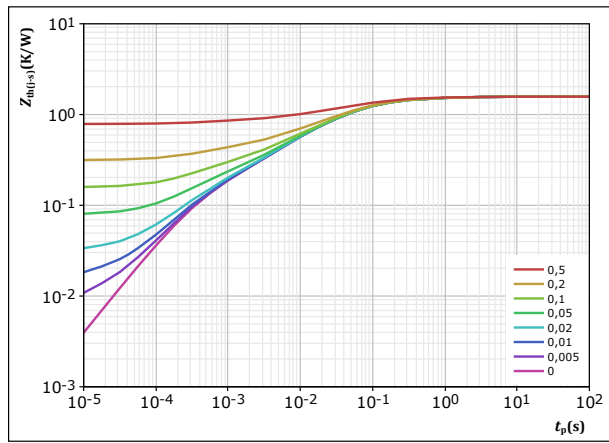


figure 4. IGBT

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$



IGBT thermal model values	
R (K/W)	τ (s)
7,66E-02	1,73E+00
2,00E-01	2,58E-01
6,54E-01	5,93E-02
3,77E-01	1,31E-02
1,51E-01	2,99E-03
1,13E-01	3,69E-04



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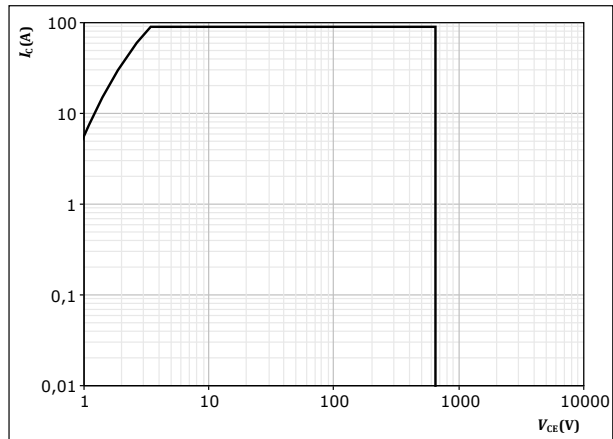
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Boost Switch Characteristics

figure 5. IGBT

Safe operating area

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

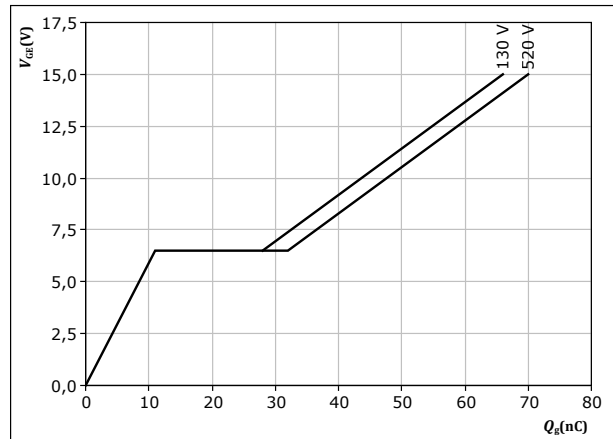


$D =$ single pulse
 $T_s = 80$ °C
 $V_{GE} = 15$ V
 $T_j = T_{jmax}$

figure 6. IGBT

Gate voltage vs gate charge

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



$I_C = 30$ A
 $T_j = 25$ °C



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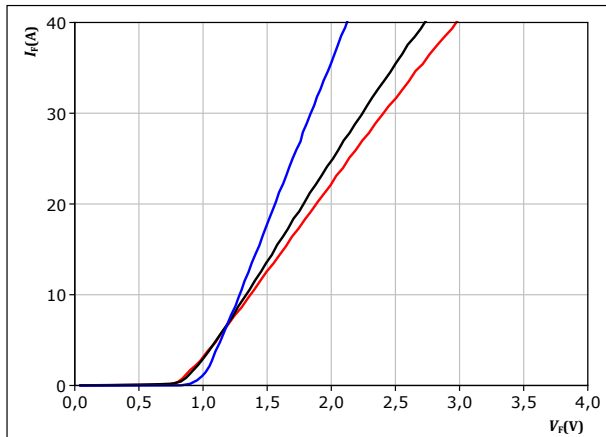
datasheet

Boost Diode Characteristics

figure 7. FWD

Typical forward characteristics

$$I_F = f(V_F)$$



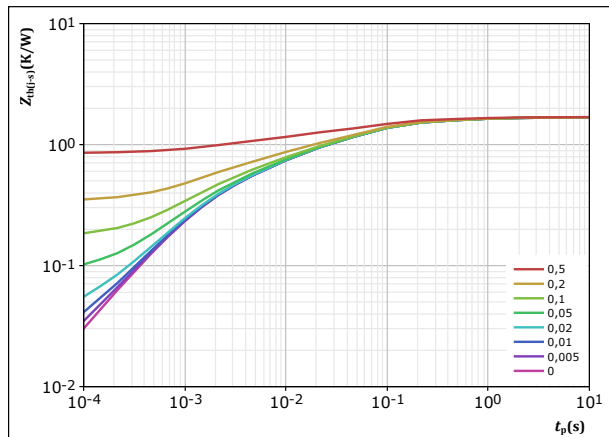
$t_p = 250 \mu s$

T_j : 25 °C, 125 °C, 150 °C

figure 8. FWD

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$



$D = t_p / T$

$R_{th(j-s)} = 1,688 \text{ K/W}$

FWD thermal model values

$R \text{ (K/W)}$	$\tau \text{ (s)}$
4,48E-02	7,65E+00
1,86E-01	4,44E-01
7,25E-01	5,81E-02
4,37E-01	7,68E-03
3,05E-01	1,26E-03



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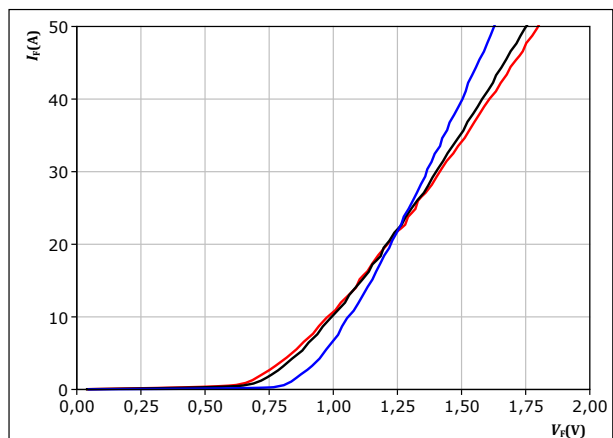
datasheet

Boost Sw. Protection Diode Characteristics

figure 9. Rectifier

Typical forward characteristics

$$I_F = f(V_F)$$



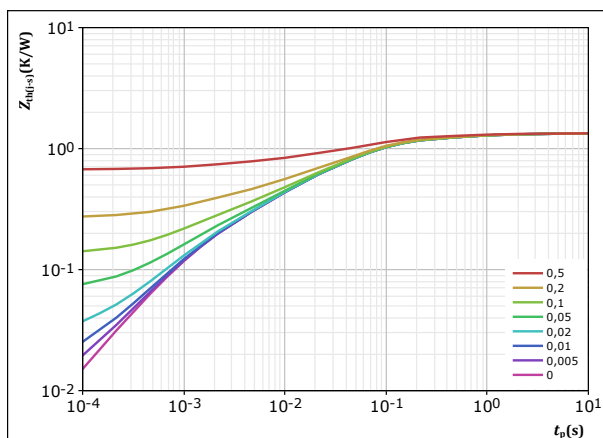
$t_p = 250 \mu s$

T_j : 25 °C, 125 °C, 150 °C

figure 10. Rectifier

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$



$D = t_p / T$

$R_{th(j-s)} = 1,337 \text{ K/W}$

Rectifier thermal model values

$R \text{ (K/W)}$	$\tau \text{ (s)}$
4,14E-02	4,64E+00
1,84E-01	4,60E-01
7,06E-01	5,77E-02
2,79E-01	8,95E-03
1,32E-01	1,18E-03



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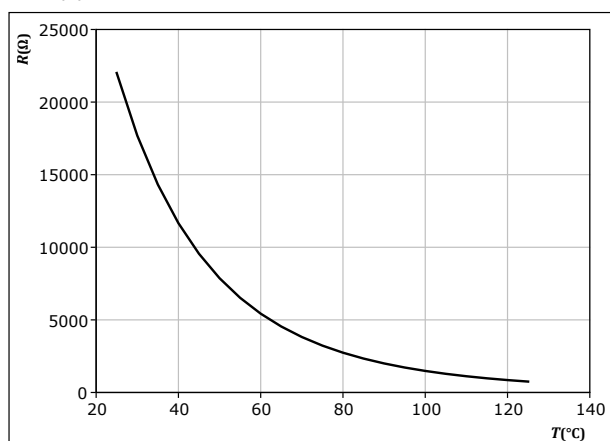
Thermistor Characteristics

figure 11.

Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$





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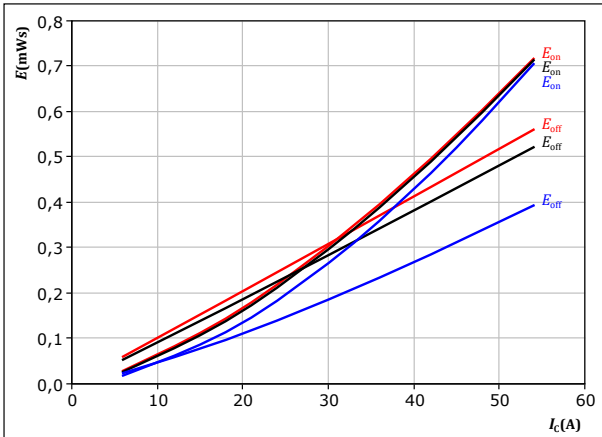
Boost Switching Characteristics

figure 12.

IGBT

Typical switching energy losses as a function of collector current

$$E = f(I_c)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω
 $R_{goff} = 16$ Ω

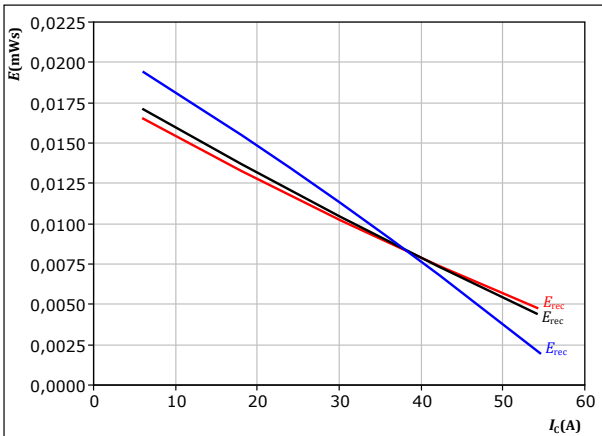
T_j : 25 °C
125 °C
150 °C

figure 14.

FWD

Typical reverse recovered energy loss as a function of collector current

$$E_{rec} = f(I_c)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω

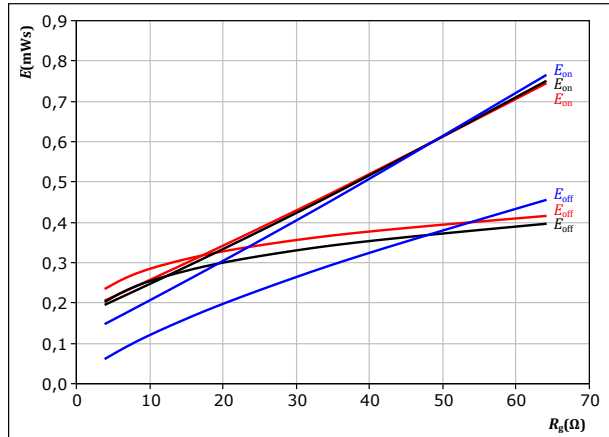
T_j : 25 °C
125 °C
150 °C

figure 13.

IGBT

Typical switching energy losses as a function of IGBT turn on gate resistor

$$E = f(R_g)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_c = 30$ A

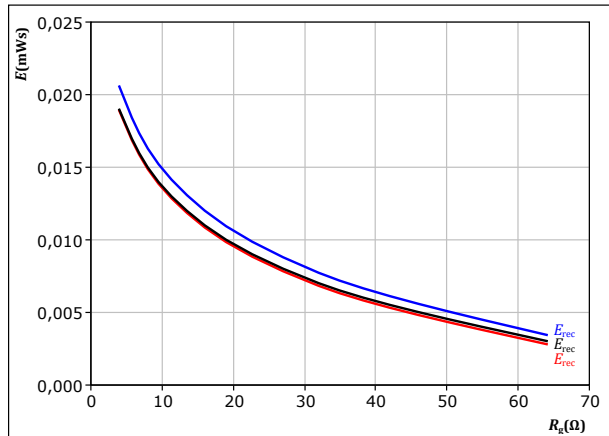
T_j : 25 °C
125 °C
150 °C

figure 15.

FWD

Typical reverse recovered energy loss as a function of IGBT turn on gate resistor

$$E_{rec} = f(R_g)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_c = 30$ A

T_j : 25 °C
125 °C
150 °C



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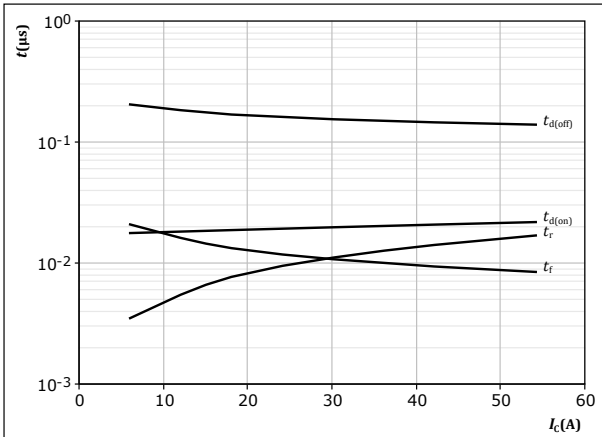
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Boost Switching Characteristics

figure 16.

IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$



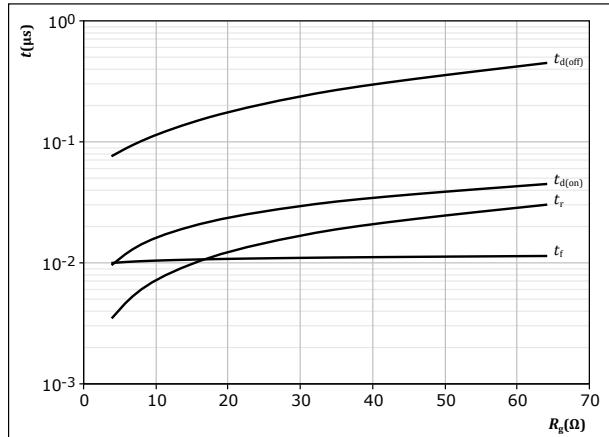
With an inductive load at

$T_j = 150$ °C
 $V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω
 $R_{goff} = 16$ Ω

figure 17.

IGBT

Typical switching times as a function of IGBT turn on gate resistor
 $t = f(R_g)$



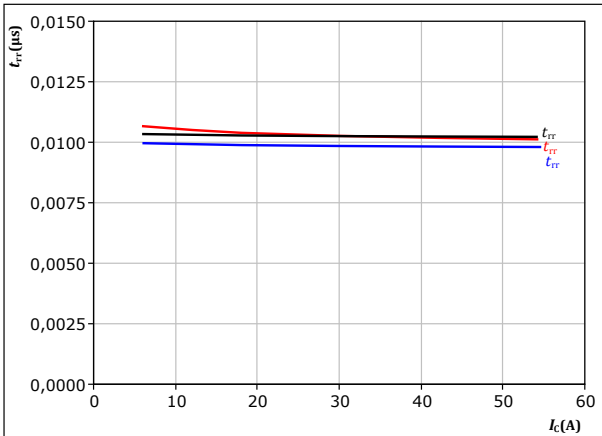
With an inductive load at

$T_j = 150$ °C
 $V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_C = 30$ A

figure 18.

FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$



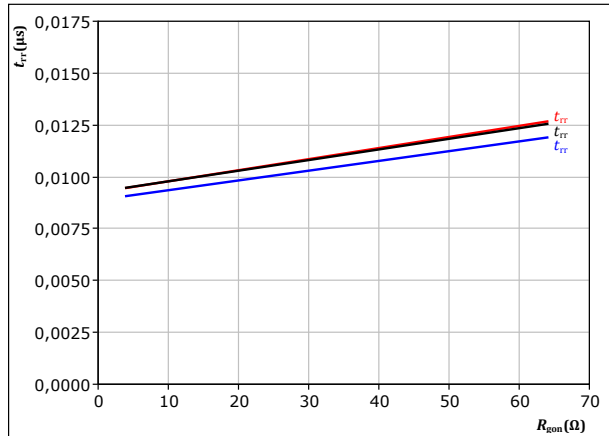
With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω
 $T_j: 25$ °C (blue), 125 °C (black), 150 °C (red)

figure 19.

FWD

Typical reverse recovery time as a function of IGBT turn on gate resistor
 $t_{rr} = f(R_{gon})$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_C = 30$ A
 $T_j: 25$ °C (blue), 125 °C (black), 150 °C (red)



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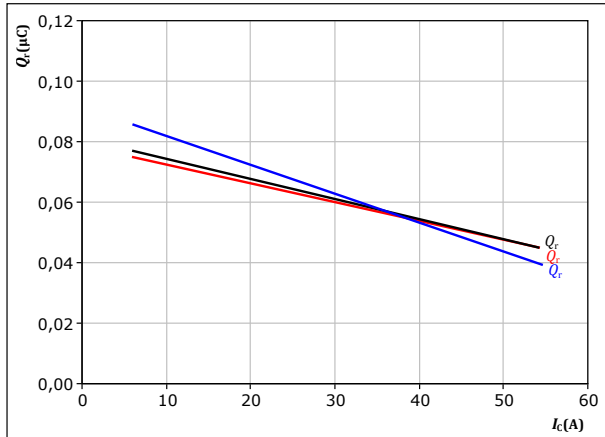
Boost Switching Characteristics

figure 20.

FWD

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω

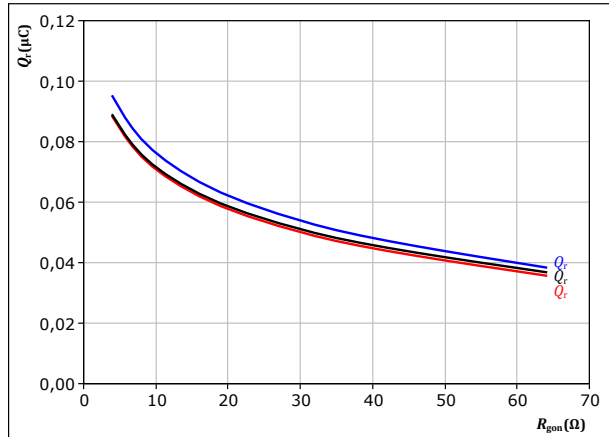
T_j :
— 25 °C
— 125 °C
— 150 °C

figure 21.

FWD

Typical recovered charge as a function of IGBT turn on gate resistor

$$Q_r = f(R_{gon})$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_c = 30$ A

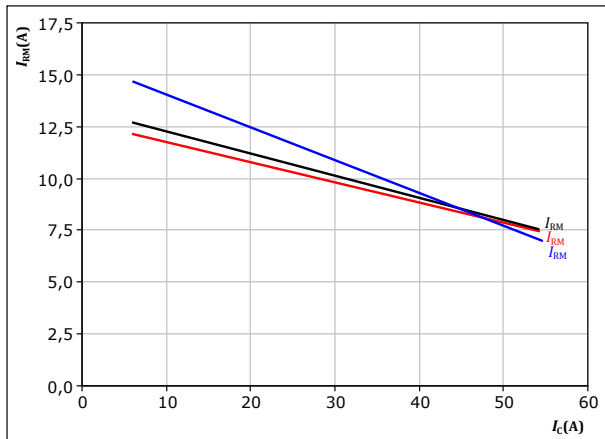
T_j :
— 25 °C
— 125 °C
— 150 °C

figure 22.

FWD

Typical peak reverse recovery current as a function of collector current

$$I_{RM} = f(I_c)$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω

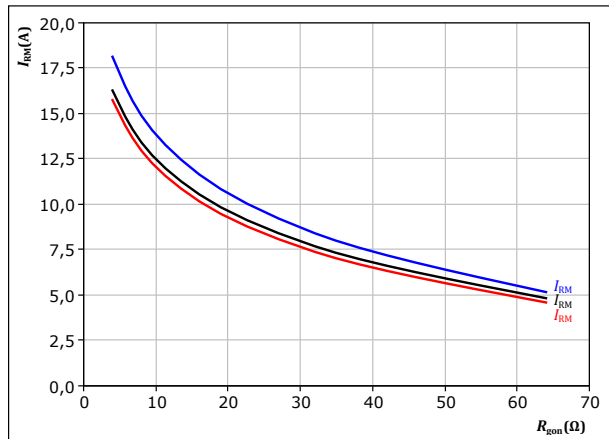
T_j :
— 25 °C
— 125 °C
— 150 °C

figure 23.

FWD

Typical peak reverse recovery current as a function of IGBT turn on gate resistor

$$I_{RM} = f(R_{gon})$$



With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_c = 30$ A

T_j :
— 25 °C
— 125 °C
— 150 °C

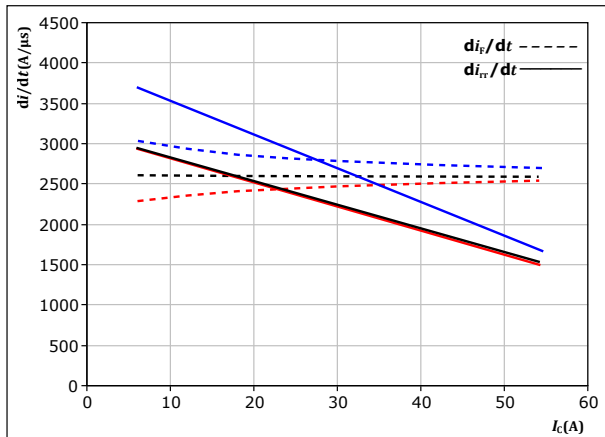


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Boost Switching Characteristics

figure 24. FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_r/dt = f(I_C)$

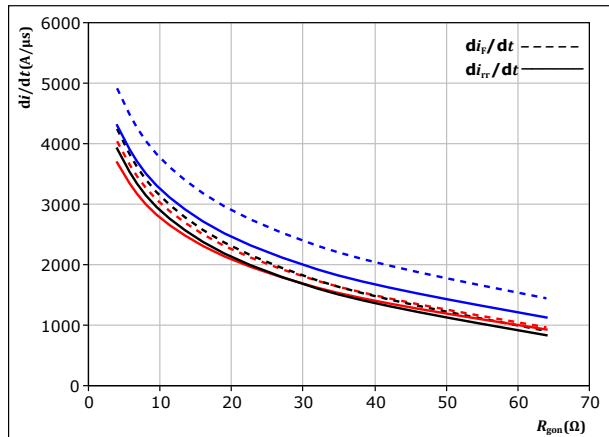


With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $R_{gon} = 16$ Ω
 $T_j: 25$ °C
 125 °C
 150 °C

figure 25. FWD

Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor
 $di_f/dt, di_r/dt = f(R_{gon})$



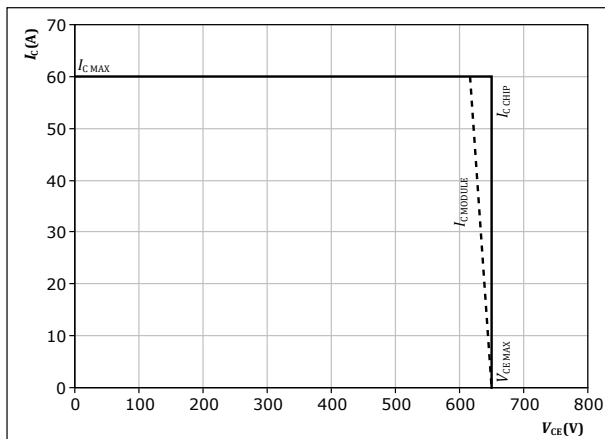
With an inductive load at

$V_{CE} = 400$ V
 $V_{GE} = 0/15$ V
 $I_C = 30$ A
 $T_j: 25$ °C
 125 °C
 150 °C

figure 26. IGBT

Reverse bias safe operating area

$I_C = f(V_{CE})$



At $T_j = 150$ °C
 $R_{gon} = 16$ Ω
 $R_{goff} = 16$ Ω



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Boost Switching Definitions

figure 27. IGBT

Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff} (t_{Eoff} = integrating time for E_{off})

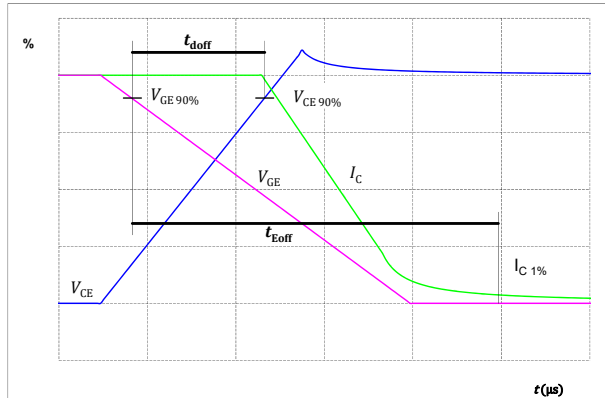


figure 28. IGBT

Turn-on Switching Waveforms & definition of t_{don} , t_{Eon} (t_{Eon} = integrating time for E_{on})

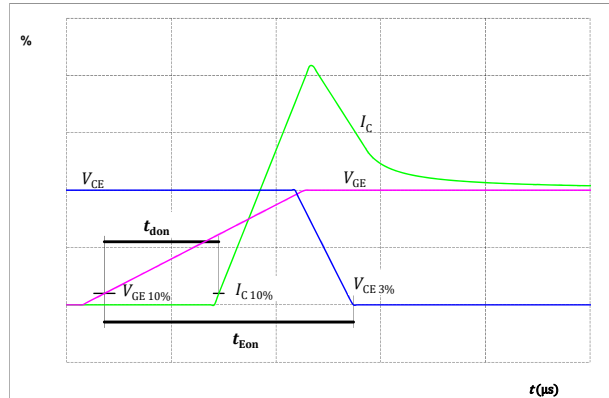


figure 29. IGBT

Turn-off Switching Waveforms & definition of t_f

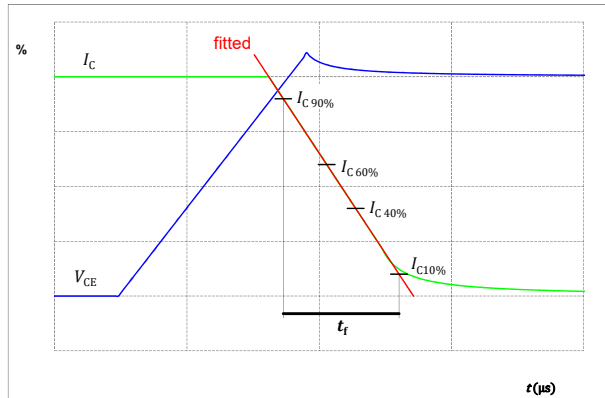
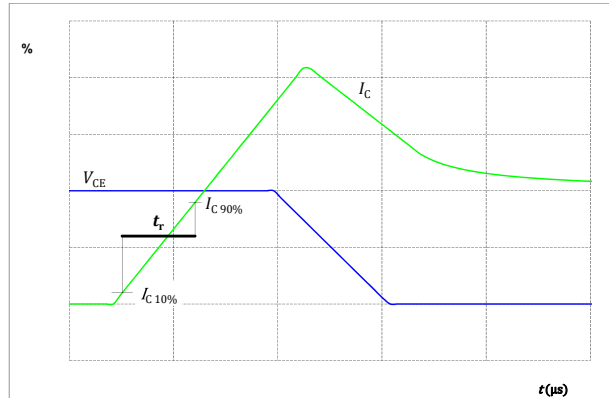


figure 30. IGBT

Turn-on Switching Waveforms & definition of t_r





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Boost Switching Definitions

figure 31.

FWD

Turn-off Switching Waveforms & definition of t_{rr}

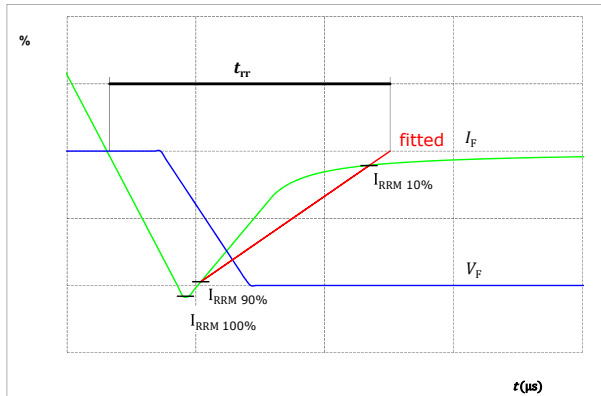
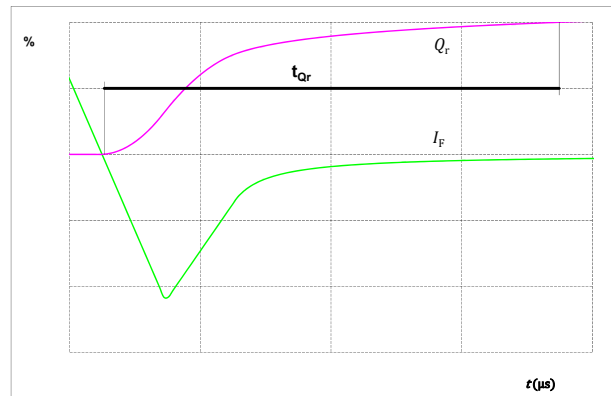


figure 32.

FWD

Turn-on Switching Waveforms & definition of t_{Qr} (t_{Qr} = integrating time for Q_r)





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10-FZ073BA030SM07-M575L308

datasheet

Ordering Code	
Version	Ordering Code
Without thermal paste	10-FZ073BA030SM07-M575L308
With thermal paste (5,2 W/mK, PTM6000HV)	10-FZ073BA030SM07-M575L308-/7/

Marking						
	Text	Name	Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNN- TTTTIVV	WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	Type&Ver TTTTTIVV	Lot number LLLLL	Serial SSSS	Date code WWYY	

Outline

Pin table [mm]			
Pin	X	Y	Function
1	33,3	0	NTC1
2	30,7	0	NTC2
3	23,85	0	Boost3
4	15,95	0	Boost2
5	9,6	0	Boost1
6	2,6	0	DC+
7	0	0	DC+
8	0	22,3	DC-
9	2,6	22,3	G1
10	5,5	22,3	S1
11	13,1	22,3	DC-
12	15,9	22,3	S2
13	19,4	22,3	G2
14	27,7	22,3	S3
15	30,7	22,3	G3
16	33,3	22,3	DC-

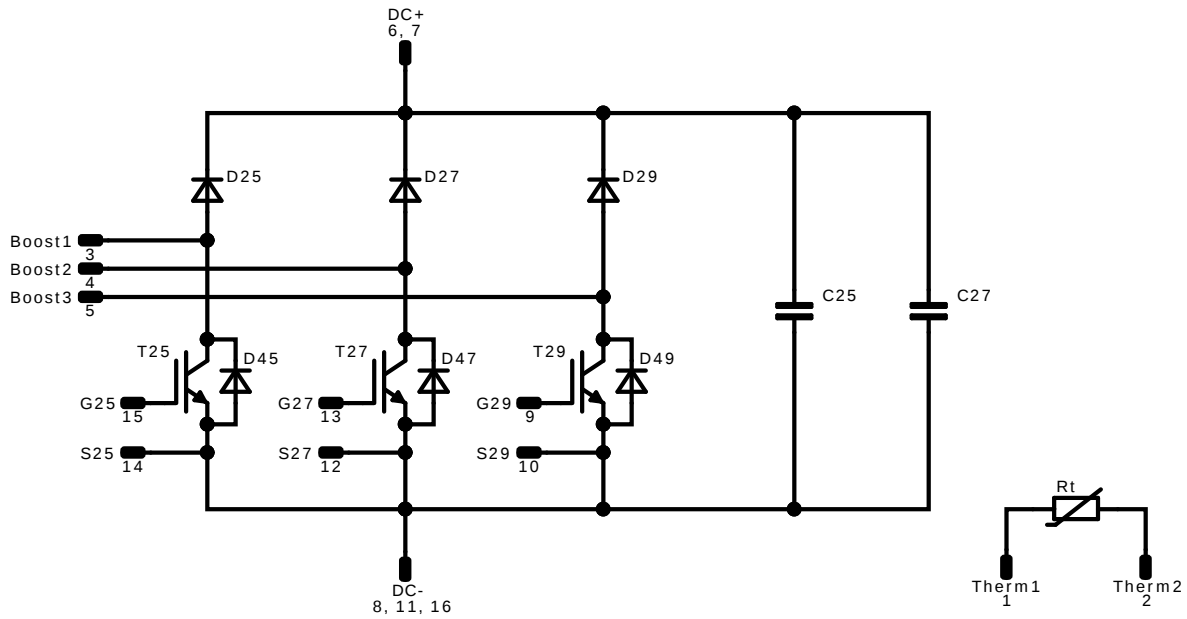
The image contains two technical drawings of a component. The top drawing is a side view showing a trapezoidal profile with a flat top. It features 16 pins along the top edge, with a pin pitch dimension of $\phi 1.65$ and a total height dimension of 16.5 ± 0.5 . The bottom drawing is a top view showing a rectangular package with mounting tabs on the left and right sides. It displays the pin locations numbered 1 through 16, arranged in two rows. The package width is dimensioned as 16.5 and the height as 16.5 . A coordinate system is shown with the X-axis pointing right and the Y-axis pointing up, with a dimension of 16.5 for the X-axis offset.

Tolerance of pinpositions: $\pm 0.5\text{mm}$ at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T25, T27, T29	IGBT	650 V	30 A	Boost Switch	
D25, D27, D29	FWD	650 V	16 A	Boost Diode	
D45, D47, D49	Rectifier	1600 V	18 A	Boost Sw. Protection Diode	
C25, C27	Capacitor	630 V		Capacitor (DC)	
Rt	Thermistor			Thermistor	



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10-FZ073BA030SM07-M575L308
datasheet

Packaging instruction				
Standard packaging quantity (SPQ) 135	>SPQ	Standard	<SPQ	Sample
Handling instruction				
Handling instructions for <i>flow 0</i> packages see vincotech.com website.				
Package data				
Package data for <i>flow 0</i> packages see vincotech.com website.				
Vincotech thermistor reference				
See Vincotech thermistor reference table at vincotech.com website.				
UL recognition and file number				
This device is UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,sp}=175^{\circ}\text{C}$ and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.				

Document No.:	Date:	Modification:	Pages
10-FZ073BA030SM07-M575L308-D3-14	19 Jul. 2026	PCN-2025-002	

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.