



Vincotech

10-EZ12B2A032ME-LQ17L18T

datasheet

flowBOOST E1 SiC

1200 V / 32 mΩ

Topology features

- Dual Booster
- Integrated DC capacitor
- Kelvin Emitter for improved switching performance
- Open Emitter configuration
- Temperature sensor

Component features

- High Blocking Voltage with low drain source on state resistance
- High speed SiC-MOSFET technology
- Resistant to Latch-up

Housing features

- Base isolation: Al₂O₃
- Convex shaped substrate for superior thermal contact
- Compact housing
- CTI600 housing material
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

Target applications

- Charging Stations
- Energy Storage Systems
- Power Supply
- Solar Inverters
- UPS
- Welding & Cutting

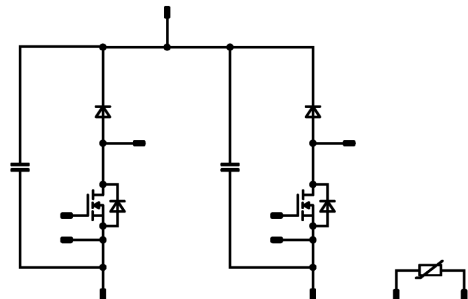
Types

- 10-EZ12B2A032ME-LQ17L18T

flow E1 12 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Boost Switch				
Drain-source voltage	V_{DS}		1200	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	39	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	120	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	74	W
Gate-source voltage	V_{GS}	static	-4 / 15	V
		dynamic	-8 / 19	V
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Diode

Peak repetitive reverse voltage	V_{RRM}		1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	27	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	142	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	73	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	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	45	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, $t_p = 10\text{ ms}$ $T_j = 150\text{ °C}$	270	A
Surge current capability	I^2t		370	A²s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	53	W
Maximum junction temperature	T_{jmax}		150	°C

Capacitor (DC)

Maximum DC voltage	V_{MAX}		1500	V
Operation Temperature	T_{op}		-55 ... 125	°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			9,02	mm
Comparative Tracking Index	CTI		≥ 600	

*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

Drain-source on-state resistance	$r_{DS(on)}$		15		40	25 125 150	22,4	34,2 42,1 46,4	41,6 ⁽¹⁾	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$			0,0115	25	1,8	2,5	3,6	V
Gate to Source Leakage Current	I_{GSS}		15	0		25		10	250	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	1200		25		1	19	μA
Internal gate resistance	r_g							1,7		Ω
Gate charge	Q_g		-4/15	800	40	25		118		nC
Short-circuit input capacitance	C_{iss}	$f = 100$ kHz	0	1000	0	25		3357		pF
Short-circuit output capacitance	C_{oss}							129		
Reverse transfer capacitance	C_{rss}							8		
Diode forward voltage	V_{SD}		0		20	25		4,6		V

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						1,28		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 16$ Ω $R_{goff} = 16$ Ω	0/15	600	32	25 125 150		28,05 22,78 21,58		ns
Rise time	t_r					25 125 150		18,72 16,23 16,11		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		140,72 161,13 166,31		ns
Fall time	t_f					25 125 150		9,95 10,66 10,84		ns
Turn-on energy (per pulse)	E_{on}					25 125 150		0,56 0,48 0,467		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		0,351 0,349 0,348		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				20	25 125 150		1,51 2,03 2,13	1,8 ⁽¹⁾	V
Reverse leakage current	I_R	$V_i = 1200$ V				25		60	500	µA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						1,3		K/W
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Dynamic

Peak recovery current	I_{RM}	$di/dt=1653$ A/µs $di/dt=2444$ A/µs $di/dt=2423$ A/µs	0/15	600	32	25 125 150		13,17 15,17 15,42		A
Reverse recovery time	t_{rr}					25 125 150		12,76 12,8 12,73		ns
Recovered charge	Q_r					25 125 150		0,101 0,118 0,119		µC
Reverse recovered energy	E_{rec}					25 125 150		7,049x10 ⁻³ 9,369x10 ⁻³ 9,671x10 ⁻³		mWs
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					25 125 150		3530,03 4659,54 5194,64		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			28	25 125			1,1 1,04	1,5 ⁽¹⁾	V
Reverse leakage current	I_R	$V_r = 1600$ V			25 150				100 1000	μA

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 3,4$ W/mK (PSX)						1,31		K/W
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Capacitor (DC)

Static

Capacitance	C	DC bias voltage = 0 V			25			6,8		nF
Tolerance						-10			10	%
Dissipation factor		$f = 1$ kHz			25			0,15		%

Thermistor

Static

Rated resistance	R				25			5		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 499$ Ω			100	3,2			3,3	%
Power dissipation	P				25			130		mW
Power dissipation constant	d				25			1,3		mW/K
B-value	$B_{(25/50)}$	Tol. ± 1 %						3380		K
Vincotech Thermistor Reference									V	

⁽¹⁾ Value at chip level

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



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Boost Switch Characteristics

figure 1. MOSFET

Typical output characteristics

$$I_D = f(V_{DS})$$

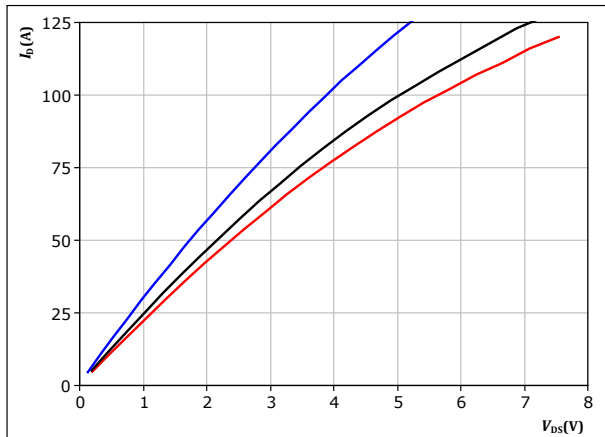


figure 2. MOSFET

Typical output characteristics

$$I_D = f(V_{DS})$$

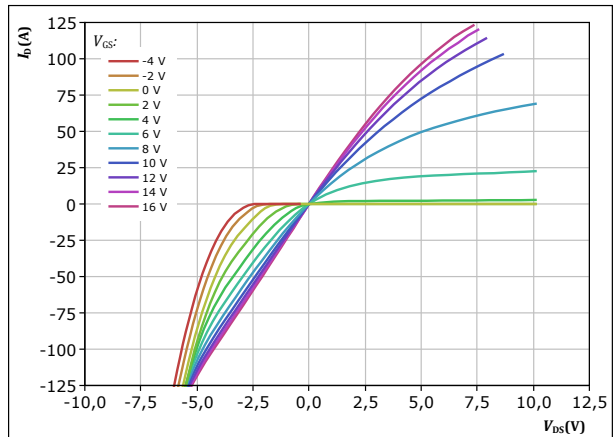


figure 3. MOSFET

Typical transfer characteristics

$$I_D = f(V_{GS})$$

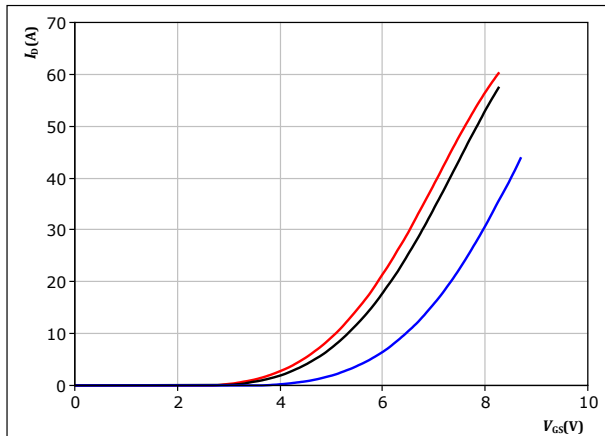
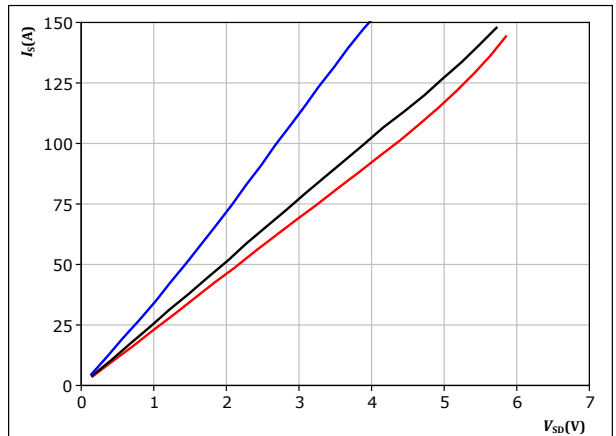


figure 4. MOSFET

Typical reverse drain current characteristics

$$I_{SD} = f(V_{SD})$$





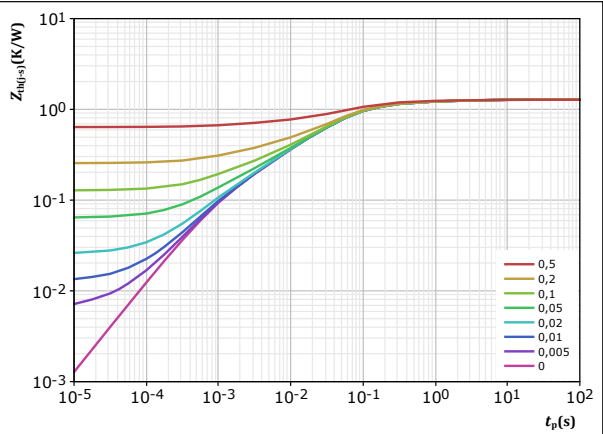
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Boost Switch Characteristics

figure 5. MOSFET

Transient thermal impedance as a function of pulse width

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

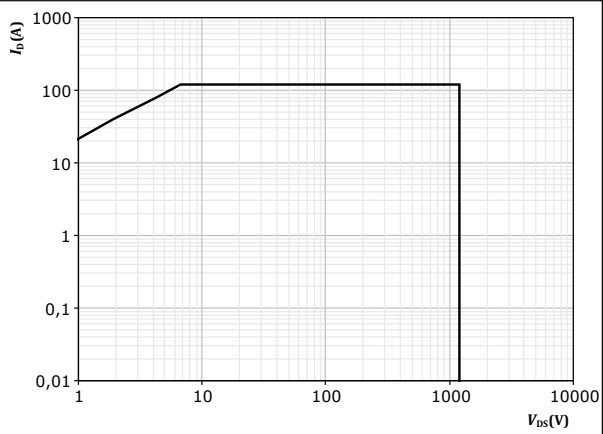


$D =$	t_p / T
$R_{th(j-a)} =$	1,276 K/W
MOSFET thermal model values	
R (K/W)	τ (s)
6,59E-02	2,75E+00
1,80E-01	3,21E-01
7,28E-01	5,55E-02
2,13E-01	8,37E-03
8,96E-02	1,01E-03

figure 6. MOSFET

Safe operating area

$I_D = f(V_{DS})$



$D =$	single pulse
$T_s =$	80 °C
$V_{GS} =$	14 V
$T_j =$	T_{jmax}



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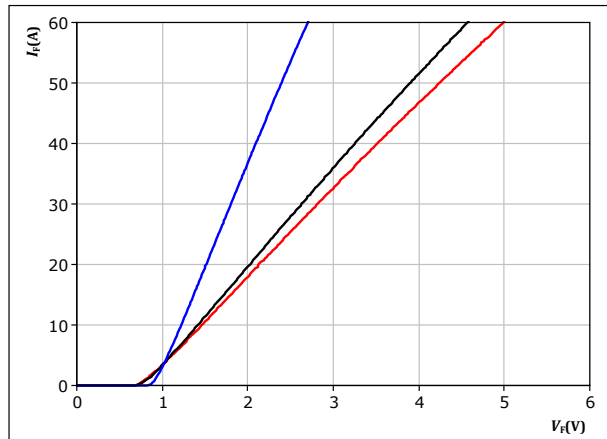
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Boost Diode Characteristics

figure 7. FWD

Typical forward characteristics

$$I_F = f(V_F)$$



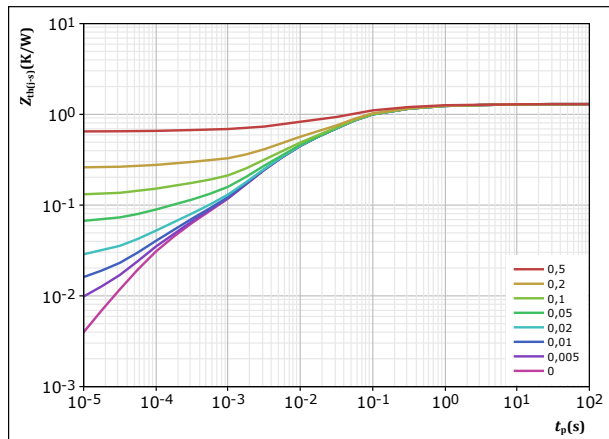
$t_p = 250 \mu s$

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	
$R_{th(j-s)} =$	1,296	K/W
FWD thermal model values		
R (K/W)	τ (s)	
6,22E-02	4,27E+00	
2,36E-01	2,99E-01	
6,69E-01	4,31E-02	
2,88E-01	4,14E-03	
4,04E-02	1,25E-04	



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Boost Sw. Protection Diode Characteristics

figure 9. Rectifier

Typical forward characteristics

$$I_F = f(V_F)$$

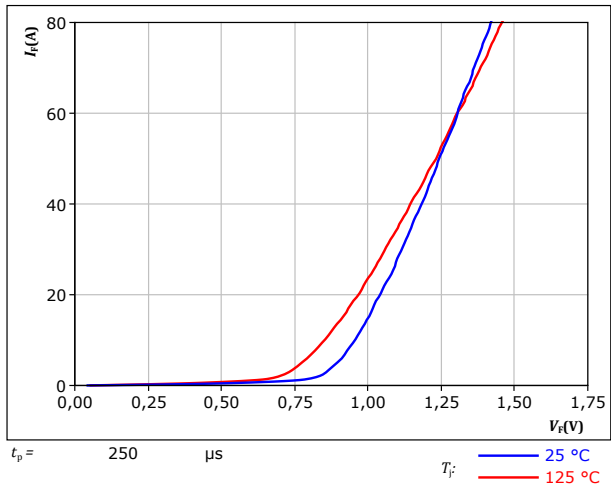
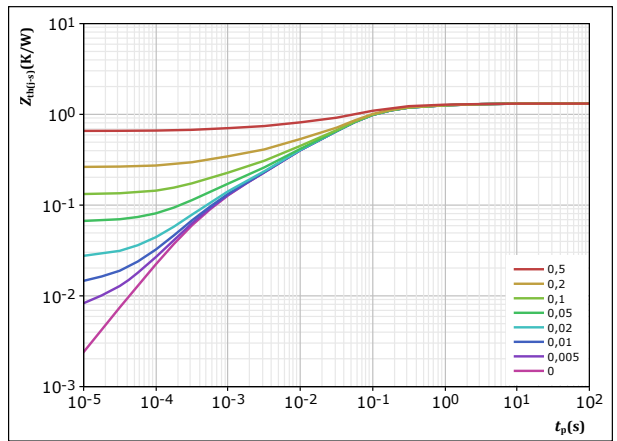


figure 10. Rectifier

Transient thermal impedance as a function of pulse width

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



$D =$	t_p / T	
$R_{th(j-s)} =$	1,314	K/W
Rectifier thermal model values		
R (K/W)	τ (s)	
8,85E-02	1,99E+00	
2,65E-01	1,87E-01	
6,64E-01	4,96E-02	
2,12E-01	5,03E-03	
8,48E-02	4,58E-04	



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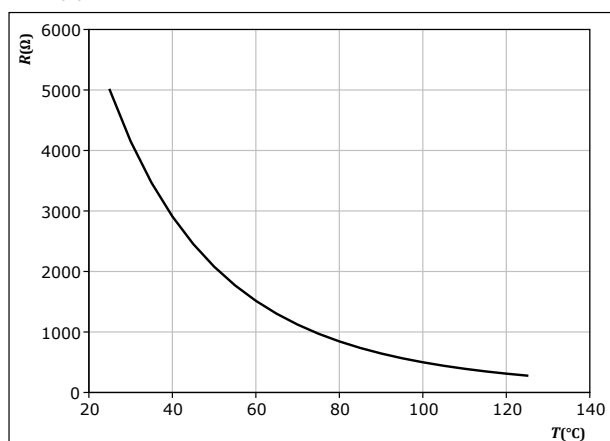
Thermistor Characteristics

figure 11.

Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$





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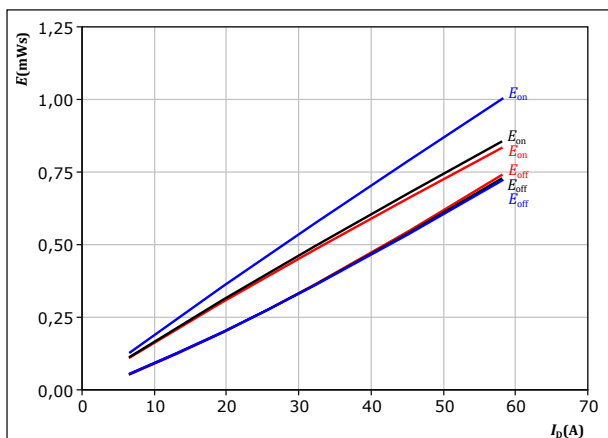
Boost Switching Characteristics

figure 12.

MOSFET

Typical switching energy losses as a function of drain current

$$E = f(I_D)$$



With an inductive load at

$V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω
 $R_{goff} = 16$ Ω

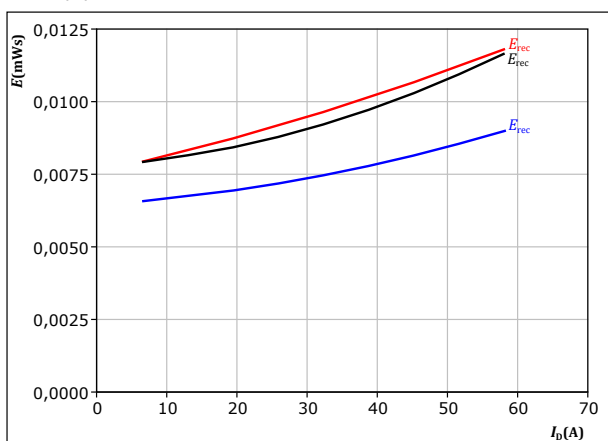
T_j : 25 °C
125 °C
150 °C

figure 14.

FWD

Typical reverse recovered energy loss as a function of drain current

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



With an inductive load at

$V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω

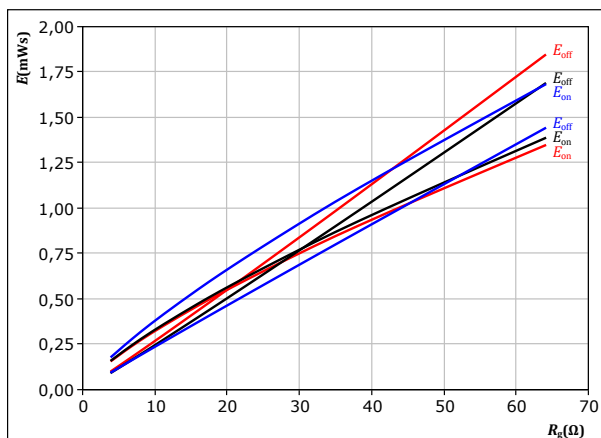
T_j : 25 °C
125 °C
150 °C

figure 13.

MOSFET

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

$$E = f(R_g)$$



With an inductive load at

$V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A

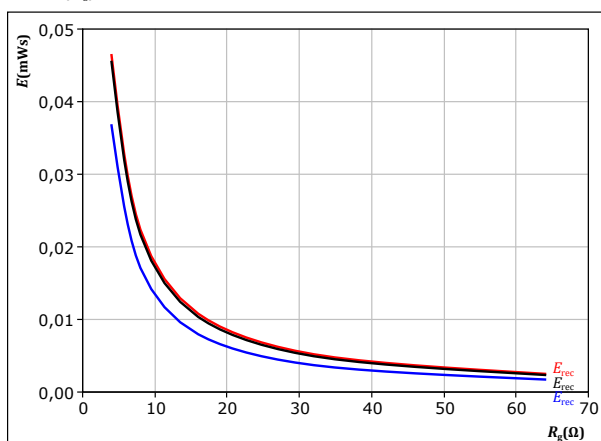
T_j : 25 °C
125 °C
150 °C

figure 15.

FWD

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

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



With an inductive load at

$V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A

T_j : 25 °C
125 °C
150 °C



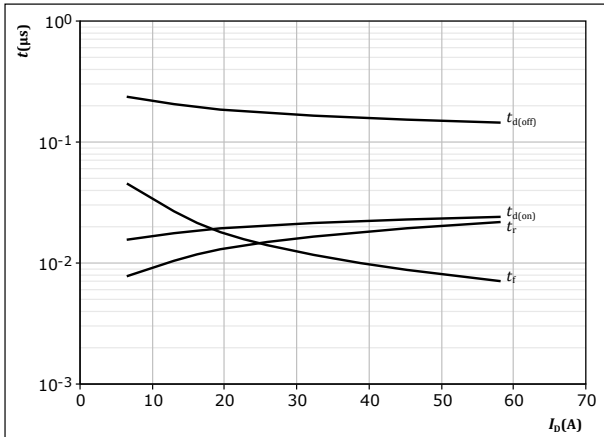
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Boost Switching Characteristics

figure 16. MOSFET

Typical switching times as a function of drain current
 $t = f(I_D)$

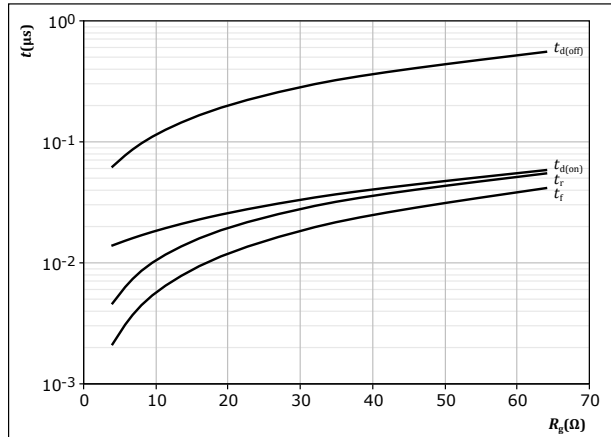


With an inductive load at

$T_j = 150$ °C
 $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω
 $R_{goff} = 16$ Ω

figure 17. MOSFET

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

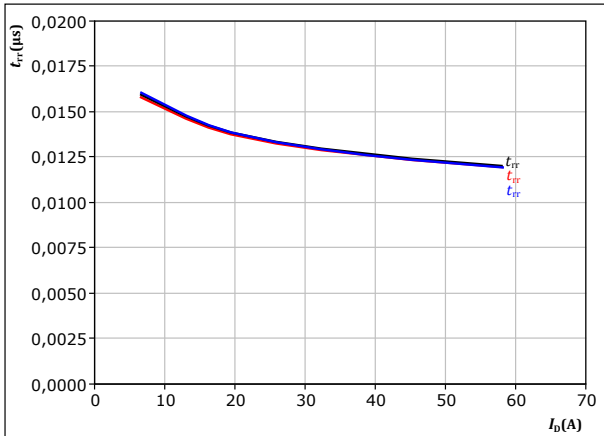


With an inductive load at

$T_j = 150$ °C
 $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A

figure 18. FWD

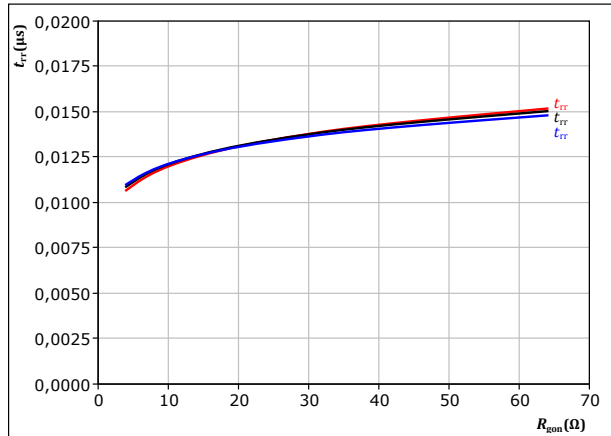
Typical reverse recovery time as a function of drain current
 $t_{rr} = f(I_D)$



At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω
 $T_j: 25$ °C
 125 °C
 150 °C

figure 19. FWD

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



At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A
 $T_j: 25$ °C
 125 °C
 150 °C



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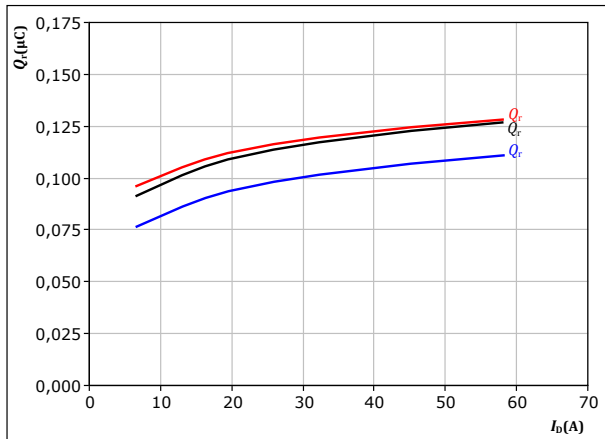
Boost Switching Characteristics

figure 20.

FWD

Typical recovered charge as a function of drain current

$$Q_r = f(I_D)$$



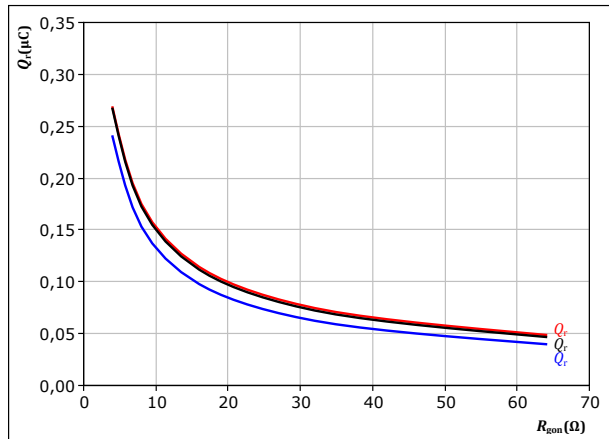
At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω
 T_j : 25 °C
125 °C
150 °C

figure 21.

FWD

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

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



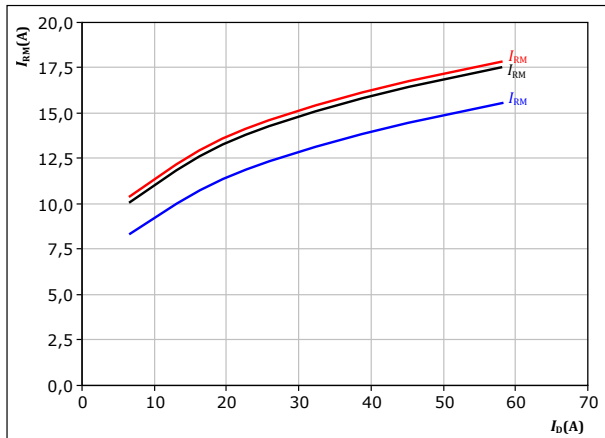
At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A
 T_j : 25 °C
125 °C
150 °C

figure 22.

FWD

Typical peak reverse recovery current as a function of drain current

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



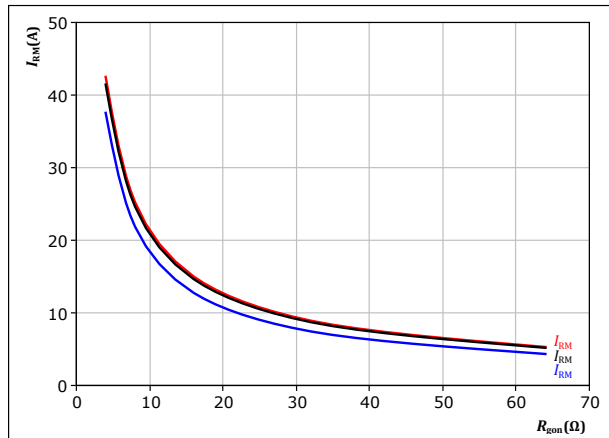
At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $R_{gon} = 16$ Ω
 T_j : 25 °C
125 °C
150 °C

figure 23.

FWD

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

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



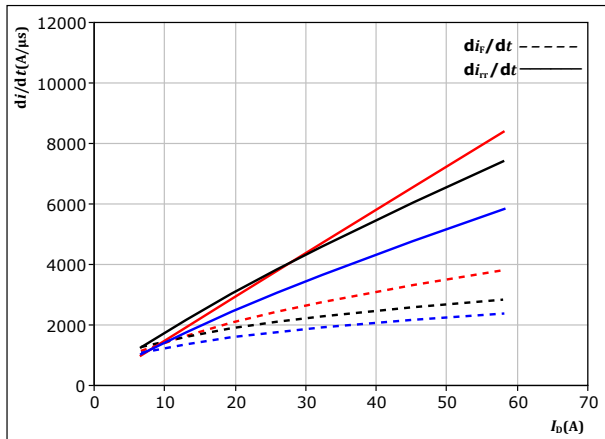
At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A
 T_j : 25 °C
125 °C
150 °C



Boost Switching Characteristics

figure 24. FWD

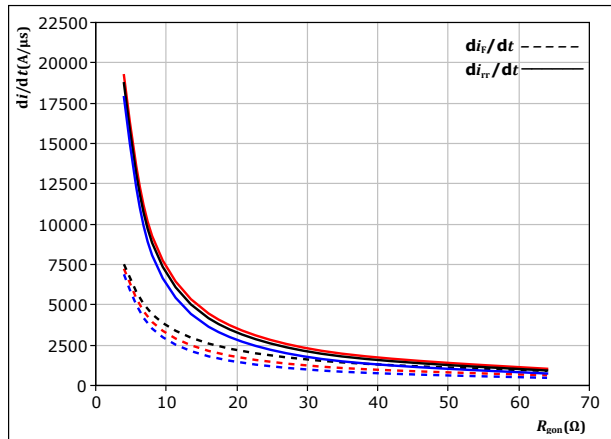
Typical rate of fall of forward and reverse recovery current as a function of drain current
 $di_f/dt, di_r/dt = f(I_D)$



At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ 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
 $di_f/dt, di_r/dt = f(R_{gon})$

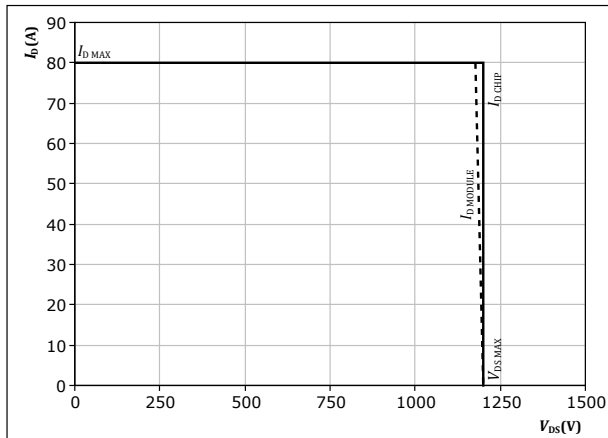


At $V_{DS} = 600$ V
 $V_{GS} = 0/15$ V
 $I_D = 32$ A
 $T_j = 25$ °C
125 °C
150 °C

figure 26. MOSFET

Reverse bias safe operating area

$I_D = f(V_{DS})$



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



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Boost Switching Definitions

figure 27. MOSFET

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

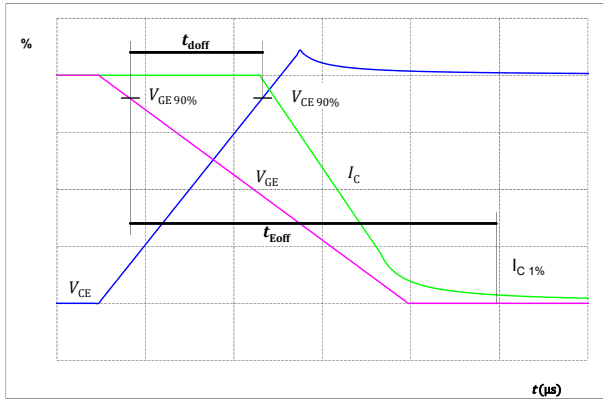


figure 28. MOSFET

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

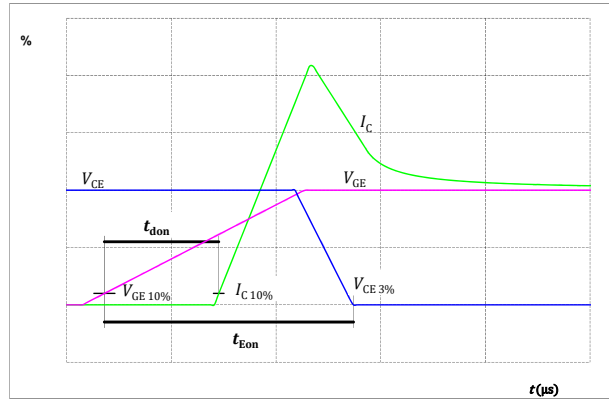


figure 29. MOSFET

Turn-off Switching Waveforms & definition of t_f

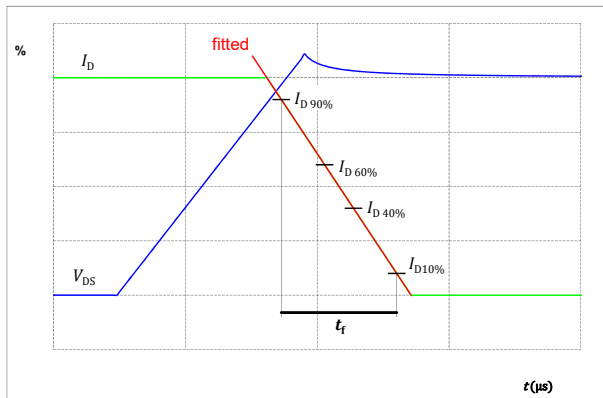
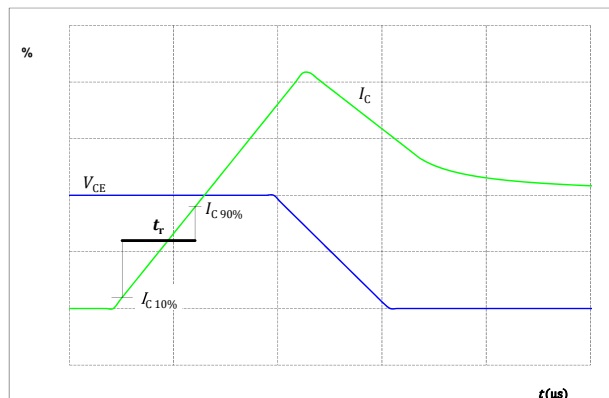


figure 30. MOSFET

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}

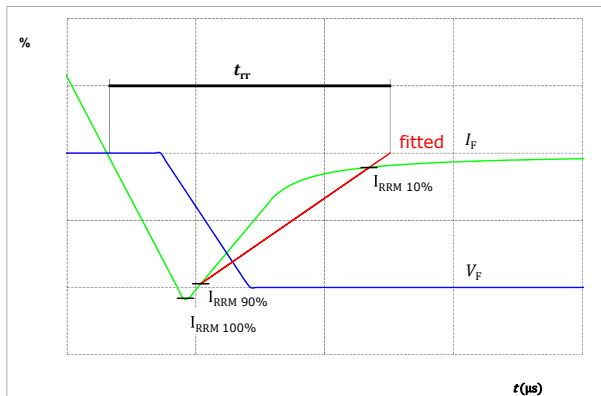


figure 32. FWD

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

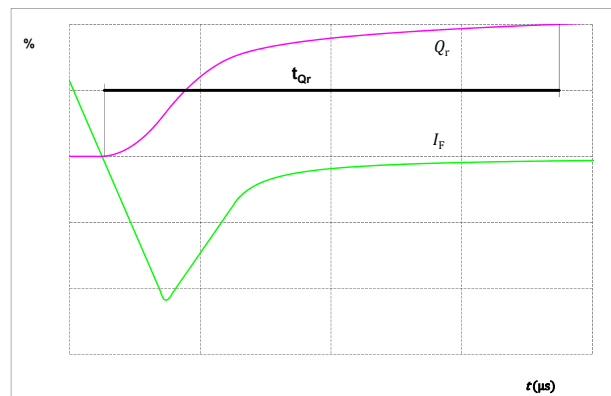
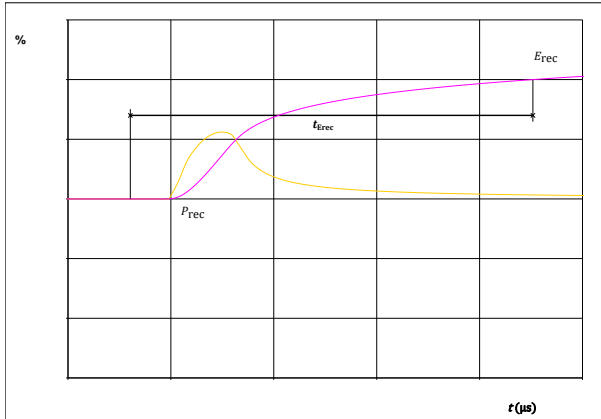


figure 33. FWD

Turn-on Switching Waveforms & definition of t_{Erec} (t_{Erec} = integrating time for E_{rec})





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10-EZ12B2A032ME-LQ17L18T

datasheet

Ordering Code	
Version	Ordering Code
Without thermal paste	10-EZ12B2A032ME-LQ17L18T
With thermal paste (5,2 W/mK, PTM6000HV)	10-EZ12B2A032ME-LQ17L18T-/7/

Marking						
	Text	Name	Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNNNN- TTTTTTVV	WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	Type&Ver TTTTTTTVV	Lot number LLLLL	Serial SSSS	Date code WWYY	

Outline

Pin table [mm]

Pin	X	Y	Function
1	32	3,2	DC-2
2	32	0	DC-2
3	28,8	3,2	G4
4	28,8	0	S4
5	12,8	0	T2
6	9,6	0	T1
7	0	0	AC2
8	0	3,2	AC2
9	not assembled		
10	not assembled		
11	not assembled		
12	not assembled		
13	0	22,4	AC1
14	0	25,6	AC1
15	28,8	25,6	G2
16	28,8	22,4	S2
17	32	25,6	DC-1
18	32	22,4	DC-1
19	22,4	12,8	DC+
20	25,6	12,8	DC+
21	28,8	12,8	DC+
22	32	12,8	DC+

center of press-fit pin head
pin head type TP, PCB plated through-hole $\varnothing 1\text{mm} +0,09 / -0,06$
for further PCB design rules refer to the latest handling instruction

16,4 ±0,1
16,5

16,4

Y

X

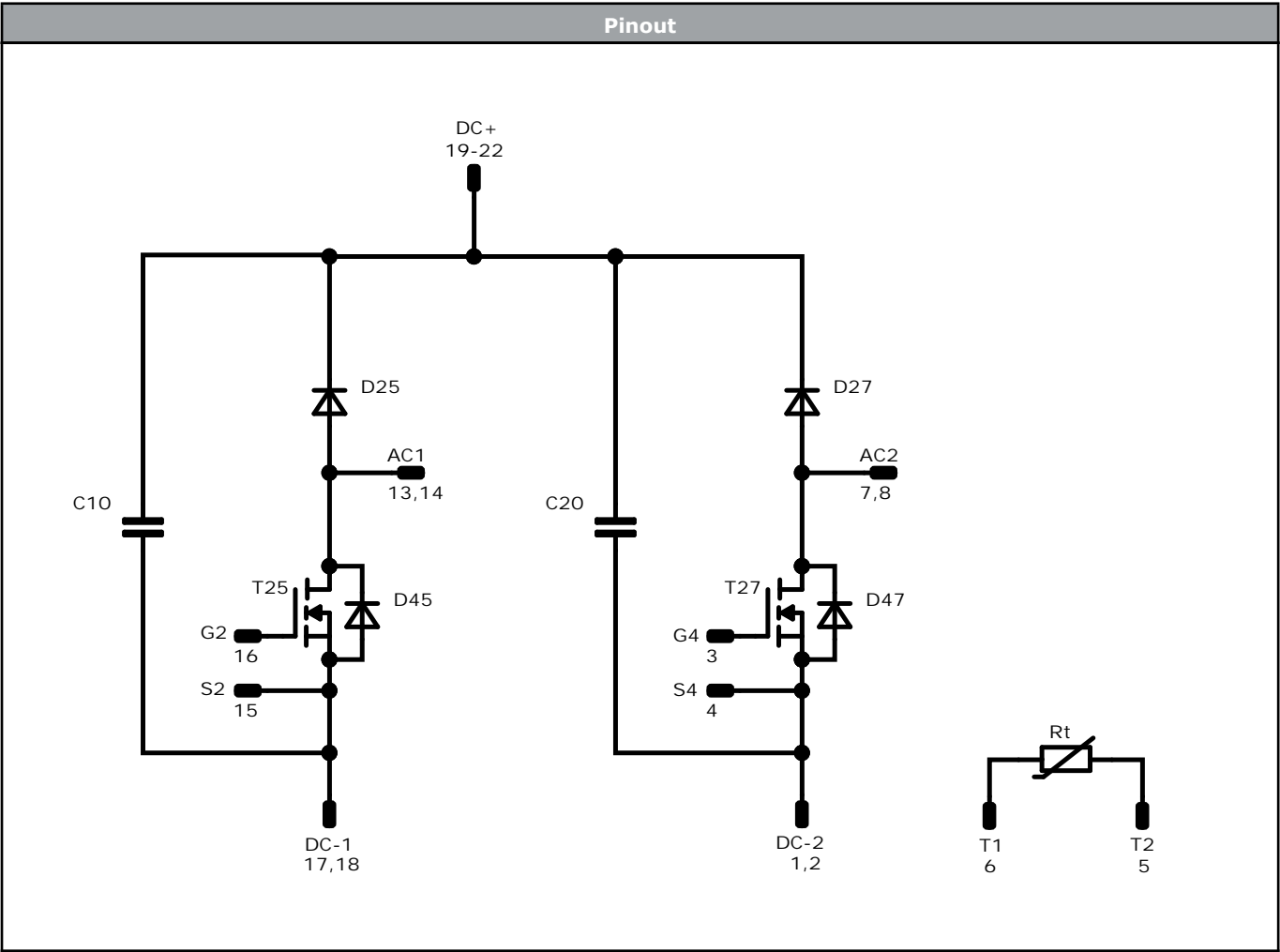
16

Tolerance of pinpositions: $\pm 0,4\text{mm}$ at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Identification					
ID	Component	Voltage	Current	Function	Comment
T25, T27	MOSFET	1200 V	32 mΩ	Boost Switch	
D25, D27	FWD	1200 V	20 A	Boost Diode	
D45, D47	Rectifier	1600 V	28 A	Boost Sw. Protection Diode	
C25, C27	Capacitor	1500 V		Capacitor (DC)	
Rt	Thermistor			Thermistor	



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Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample
Handling instruction				
Handling instructions for <i>flow</i> E1 packages see vincotech.com website.				
Package data				
Package data for <i>flow</i> E1 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-EZ12B2A032ME-LQ17L18T-D2-14	16 Apr. 2026	Correct Outline drawing and Pintable	

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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.