10-FY07ZAA055F7-L513B78
datasheet

***flow*RPI 1** 600 V / 46 mΩ

Topology features

- Kelvin Emitter for improved switching performance
- Open Emitter configuration
- Rectifier + Dual Booster + H-Bridge
- Temperature sensor

Component features

- Extremly low losses
- Improved reverse diode commutation ruggedness
- Ultra-fast body diode

Housing features

- Base isolation: Al_2O_3
- Convex shaped substrate for superior thermal contact
- Thermo-mechanical push-and-pull force relief
- Solder pin

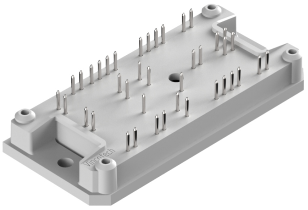
Target applications

- Charging Stations
- Welding & Cutting

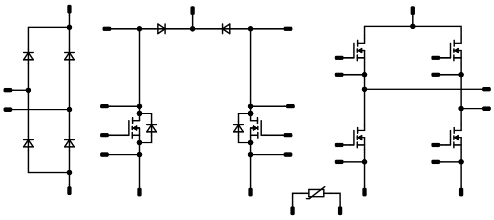
Types

- 10-FY07ZAA055F7-L513B78

flow 1 12 mm housing



Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
PFC Switch					
Drain-source voltage	V_{DSS}			600	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$	T_s = 80 °C	16	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}		100	A
Avalanche energy, single pulse	E_{AS}	V_{DD} = 50 V	I_D = 5,1 A	105	mJ
Avalanche energy, repetitive	E_{AR}	V_{DD} = 50 V	I_D = 5,1 A	0,53	mJ
MOSFET dv/dt ruggedness	dv/dt	V_{DS}= 0..400 V	T_s = 25 °C	80	V/ns
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	48	W
Gate-source voltage	V_{GSS}			±20	V
Reverse diode dv/dt	dv/dt			50	V/ns
Maximum Junction Temperature	T_{jmax}			150	°C
PFC Diode					
Peak repetitive reverse voltage	V_{RRM}			650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	14	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		45,9	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 25 °C	70	A
Surge current capability	I^2t			24,5	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	30	W
Maximum junction temperature	T_{jmax}			175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
PFC Sw. Protection Diode					
Peak repetitive reverse voltage	V_{RRM}			650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	15	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		12	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	36	W
Maximum junction temperature	T_{jmax}			175	°C
Inverter Switch					
Drain-source voltage	V_{DSS}			600	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$	T_s = 80 °C	25	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}		153	A
Avalanche energy, single pulse	E_{AS}	V_{DD} = 50 V	I_D = 6,7 A	180	mJ
Avalanche energy, repetitive	E_{AR}	V_{DD} = 50 V	I_D = 6,7 A	0,9	mJ
MOSFET dv/dt ruggedness	dv/dt	V_{DS}= 0..400 V	T_s = 25 °C	120	V/ns
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	63	W
Gate-source voltage	V_{GSS}			±20	V
Reverse diode dv/dt	dv/dt			70	V/ns
Maximum Junction Temperature	T_{jmax}			150	°C
Rectifier Diode					
Peak repetitive reverse voltage	V_{RRM}			1600	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	53	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	400	A
Surge current capability	I^2t			800	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	60	W
Maximum junction temperature	T_{jmax}			150	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
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 s	6000	V
Isolation voltage	V_{isol}	AC Voltage	t_p = 1 min	2500	V
Creepage distance				>12,7	mm
Clearance				7,58	mm
Comparative Tracking Index	CTI			≥ 200	

*100 % tested in production

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	
PFC Switch										
Static										
Drain-source on-state resistance	$r_{DS(on)}$		10		10,5	25 125		94,4 168	99(1)	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$	0		0,00053	25	3	3,5	4	V
Gate to Source Leakage Current	I_{GSS}		20	0		25			100	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	600		25			1	µA
Internal gate resistance	r_g							5,9		Ω
Gate charge	Q_g		0/10	400	10,5	25		45		nC
Short-circuit input capacitance	C_{iss}	f = 250 kHz	0	400	0	25		1952		pF
Short-circuit output capacitance	C_{oss}							33		
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,47		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 16 Ω R_{goff} = 16 Ω	0/10	400	15	25 125		41,13 38,75		ns
Rise time	t_r					25 125		8,28 9,25		ns
Turn-off delay time	$t_{d(off)}$					25 125		137,53 152,14		ns
Fall time	t_f					25 125		17,45 18,03		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=0,112 µC Q_{rFWD}=0,107 µC				25 125		0,053 0,064		mWs
Turn-off energy (per pulse)	E_{off}					25 125		0,097 0,105		mWs

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	
PFC Diode										
Static										
Forward voltage	V_F				10	25 125 150		1,56 1,75 1,83	1,7(1)	V
Reverse leakage current	I_R	V_r = 650 V				25		10	60	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						3,12		K/W
Dynamic										
Peak recovery current	I_{RM}	d*i*/d*t*=2261 A/µs d*i*/d*t*=1800 A/µs	0/10	400	15	25 125		11,56 10,69		A
Reverse recovery time	t_{rr}					25 125		15,59 16,33		ns
Recovered charge	Q_r					25 125		0,112 0,107		µC
Reverse recovered energy	E_{rec}					25 125		0,037 0,035		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125		1670,13 1567,25		A/µs

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	
PFC Sw. Protection Diode										
Static										
Forward voltage	V_F				6	25 125 150	1,23	1,72 1,58 1,54	1,87(1)	V
Reverse leakage current	I_R	V_r = 650 V				25			0,1	μA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						2,65		K/W

Characteristic Values

Parameter	Symbol	Conditions	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	Unit
Inverter Switch										
Static										
Drain-source on-state resistance	$r_{DS(on)}$		10		18	25 125		49,7 89,5	55(1)	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$	0		0,0009	25	3,5	4	4,5	V
Gate to Source Leakage Current	I_{GSS}		20	0		25			100	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	600		25			1	µA
Internal gate resistance	r_g							5,8		Ω
Gate charge	Q_g	V_{DD} = 400 V	0/10		12,4	25		79		nC
Short-circuit input capacitance	C_{iss}	f = 250 kHz	0	400	0	25		3194		pF
Short-circuit output capacitance	C_{oss}							62		
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,11		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 120 Ω R_{goff} = 16 Ω	-5/10	350	15	25 125		461,74 433,8		ns
Rise time	t_r					25 125		56,57 65,91		ns
Turn-off delay time	$t_{d(off)}$					25 125		127,81 139		ns
Fall time	t_f					25 125		8,15 7,83		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=1,11 µC Q_{rFWD}=2,15 µC				25 125		0,865 1,37		mWs
Turn-off energy (per pulse)	E_{off}					25 125		0,063 0,066		mWs
Peak recovery current	I_{RRM}	di/dt=296 A/µs di/dt=277 A/µs				25 125		23,83 32,86		A
Reverse recovery time	t_{rr}					25 125		85,01 123,67		ns
Recovered charge	Q_r					25 125		1,11 2,15		µC
Reverse recovered energy	E_{rec}					25 125		0,073 0,13		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125		4006,45 4365,28		A/µs

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	
Rectifier Diode										
Static										
Forward voltage	V_F				35	25 125 150		1,09 1,03 1,02	1,5 (1)	V
Reverse leakage current	I_R	V_r = 1600 V				25 150			100 2000	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,18		K/W
Thermistor										
Static										
Rated resistance	R					25		22		kΩ
Deviation of R_{25}	$\Delta_{R/R}$	R_{25} = 22 kΩ				25	-5		5	%
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1486 Ω				100	-12		14	%
Power dissipation	P							200		mW
Power dissipation constant	d					25		2		mW/K
B-value	$B_{(25/50)}$	Tol. ±3 %						3950		K
B-value	$B_{(25/100)}$	Tol. ±3 %						3998		K
Vincotech Thermistor Reference									B	

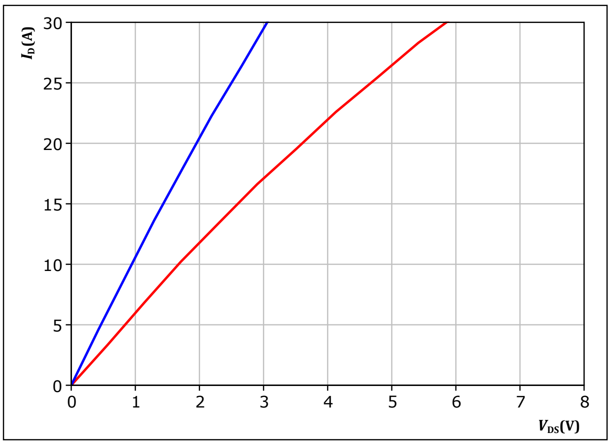
(1) Value at chip level
(2) Only valid with pre-applied Vincotech thermal interface material.

PFC Switch Characteristics

figure 1. **MOSFET**

Typical output characteristics

I_D = f(V_{DS})



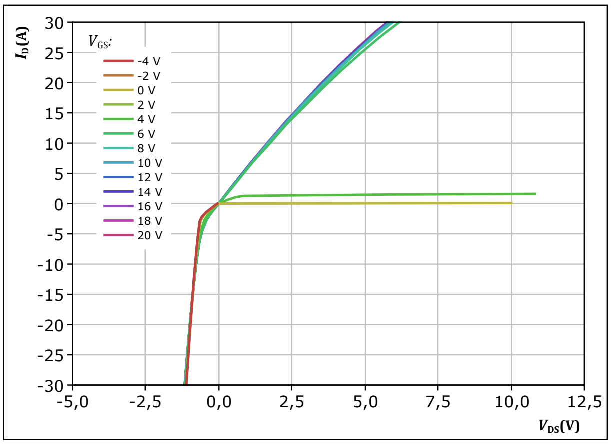
t_p =	250	µs
V_{GS} =	10	V

T_j: 25 °C (blue), 125 °C (red)

figure 2. **MOSFET**

Typical output characteristics

I_D = f(V_{DS})



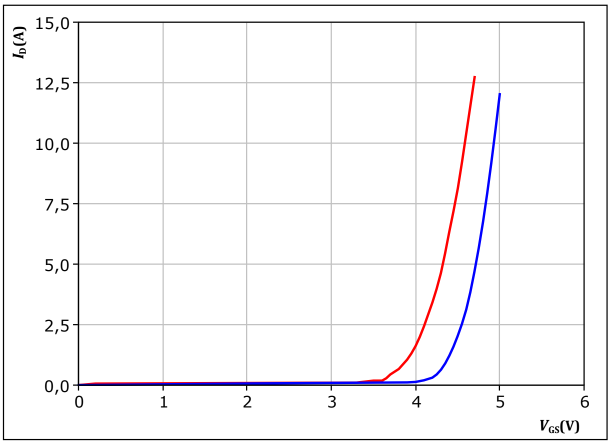
t_p =	250	µs
T_j =	125	°C

V_{GS} from -4 V to 20 V in steps of 2 V

figure 3. **MOSFET**

Typical transfer characteristics

I_D = f(V_{GS})



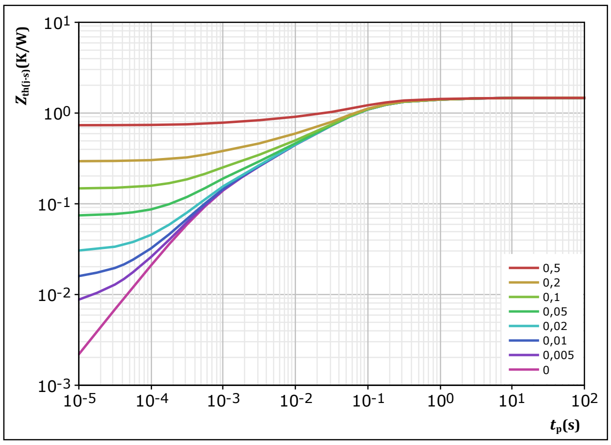
t_p =	250	µs
V_{DS} =	10	V

T_j: 25 °C (blue), 125 °C (red)

figure 4. **MOSFET**

Transient thermal impedance as a function of pulse width

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



D =	t_p / T	
$R_{th(j\text{-}s)}$ =	1,469	K/W

MOSFET thermal model values

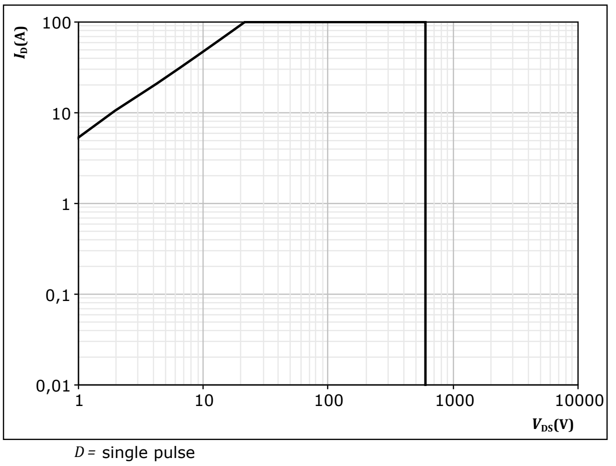
R (K/W)	τ (s)
1,02E-01	1,98E+00
3,83E-01	1,58E-01
6,43E-01	4,63E-02
2,21E-01	6,10E-03
1,22E-01	7,22E-04

PFC Switch Characteristics

figure 5. **MOSFET**

Safe operating area

$I_D = f(V_{DS})$



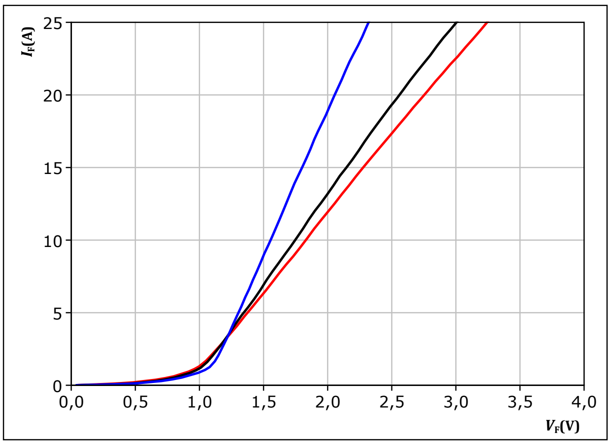
$D =$ single pulse
$T_s =$ 80 °C
$V_{GS} =$ 10 V
$T_j =$ T_{jmax}

PFC Diode Characteristics

figure 6. **FWD**

Typical forward characteristics

I_F = f(V_F)



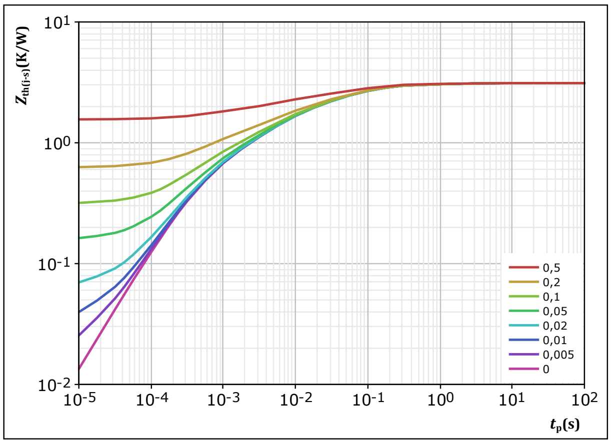
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 7. **FWD**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 3,118 K/W

FWD thermal model values

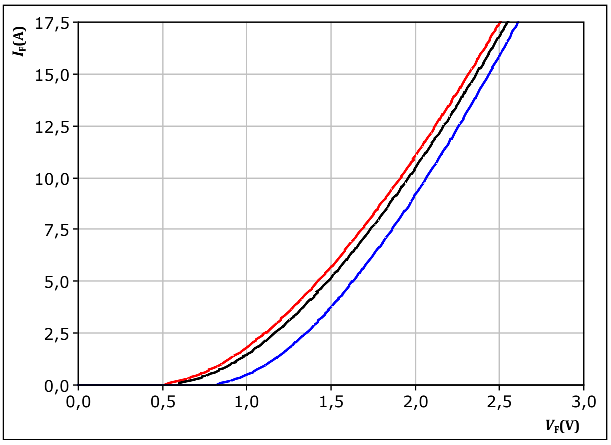
R (K/W)	τ (s)
1,23E-01	1,64E+00
7,72E-01	1,09E-01
9,48E-01	2,05E-02
8,15E-01	3,30E-03
4,59E-01	4,35E-04

PFC Sw. Protection Diode Characteristics

figure 8. **FWD**

Typical forward characteristics

I_F = f(V_F)



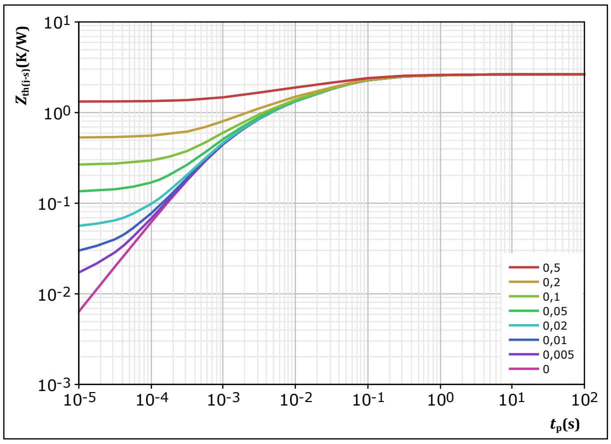
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 9. **FWD**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 2,646 K/W

FWD thermal model values

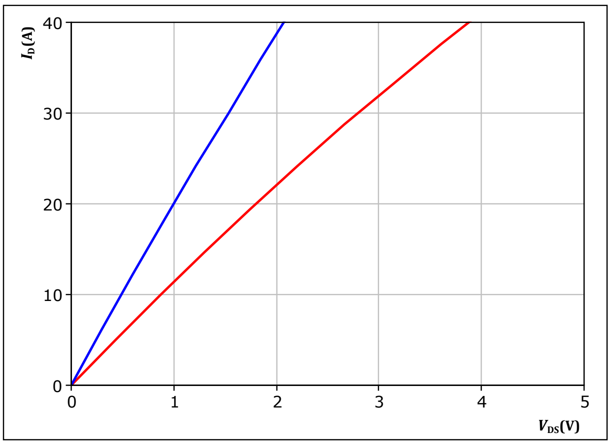
R (K/W)	τ (s)
1,02E-01	2,56E+00
3,50E-01	1,72E-01
9,53E-01	3,96E-02
7,66E-01	5,83E-03
4,76E-01	9,87E-04

Inverter Switch Characteristics

figure 10. **MOSFET**

Typical output characteristics

I_D = f(V_{DS})

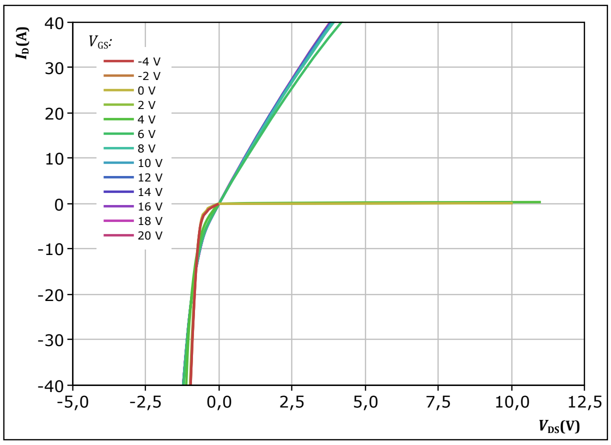


t_p =	250	μs	T_j:	25 °C
V_{GS} =	10	V		125 °C

figure 11. **MOSFET**

Typical output characteristics

I_D = f(V_{DS})



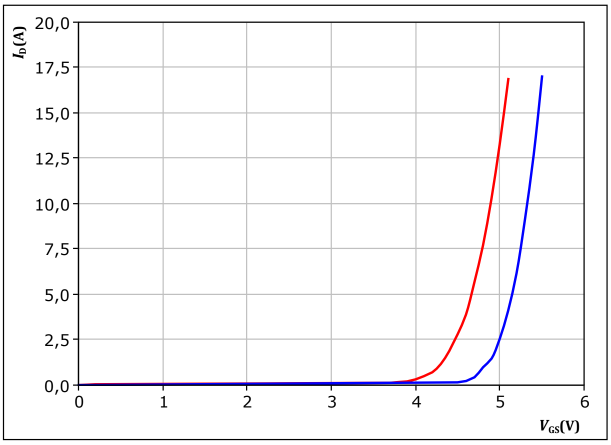
t_p =	250	μs
T_j =	125	°C

V_{GS} from -4 V to 20 V in steps of 2 V

figure 12. **MOSFET**

Typical transfer characteristics

I_D = f(V_{GS})

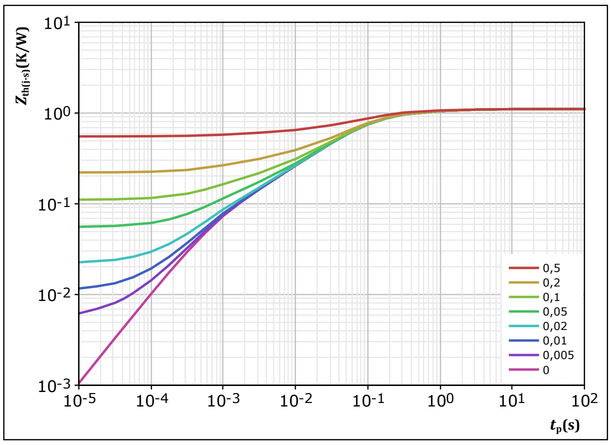


t_p =	250	μs	T_j:	25 °C
V_{DS} =	10	V		125 °C

figure 13. **MOSFET**

Transient thermal impedance as a function of pulse width

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



D =	t_p / T	
$R_{th(j-s)}$ =	1,106	K/W

MOSFET thermal model values

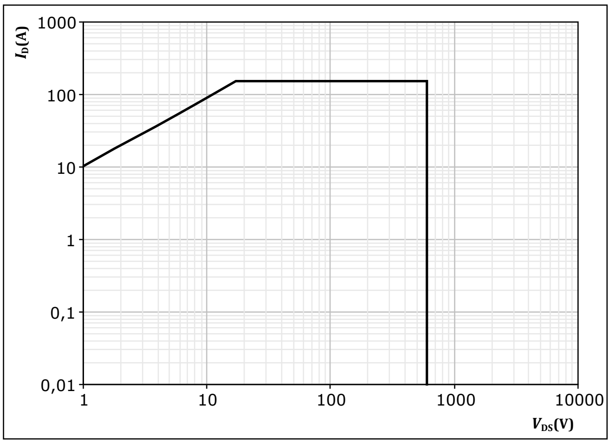
R (K/W)	τ (s)
7,52E-02	1,94E+00
1,86E-01	3,22E-01
6,08E-01	7,08E-02
1,63E-01	9,85E-03
7,34E-02	9,16E-04

Inverter Switch Characteristics

figure 14.	**MOSFET**

Safe operating area

I_D = f(V_{DS})



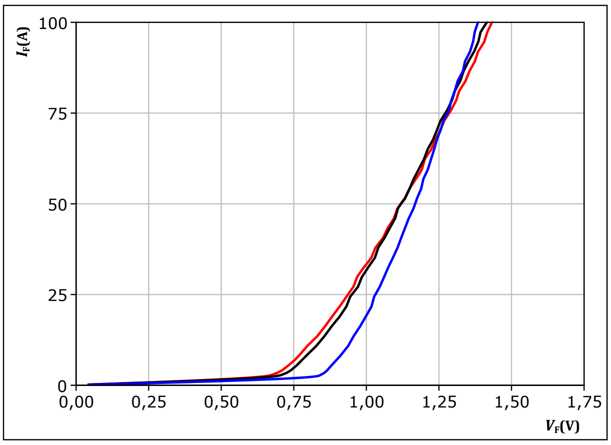
D =	single pulse	
T_s =	80	°C
V_{GS} =	10	V
T_j =	T_{jmax}	

Rectifier Diode Characteristics

figure 15. **Rectifier**

Typical forward characteristics

$I_F = f(V_F)$



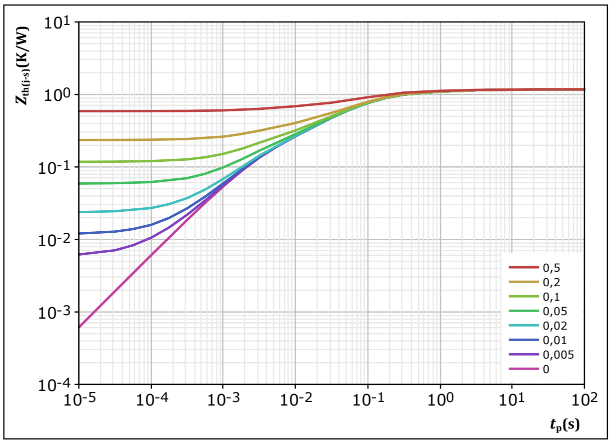
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 16. **Rectifier**

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$

$R_{th(j-s)}$ = 1,175 K/W

Rectifier thermal model values

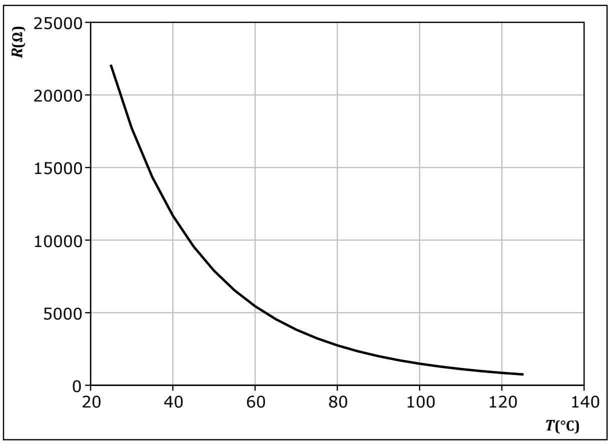
R (K/W)	τ (s)
4,14E-02	6,95E+00
1,33E-01	9,25E-01
5,37E-01	1,26E-01
3,38E-01	2,82E-02
1,26E-01	2,80E-03

Thermistor Characteristics

figure 17.	Thermistor

Typical NTC characteristic as function of temperature

R_T = f(T)

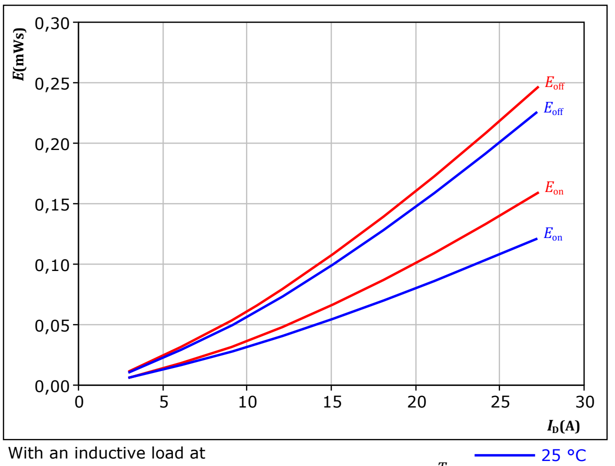


PFC Switching Characteristics

figure 18. MOSFET

Typical switching energy losses as a function of drain current

$E = f(I_D)$



With an inductive load at

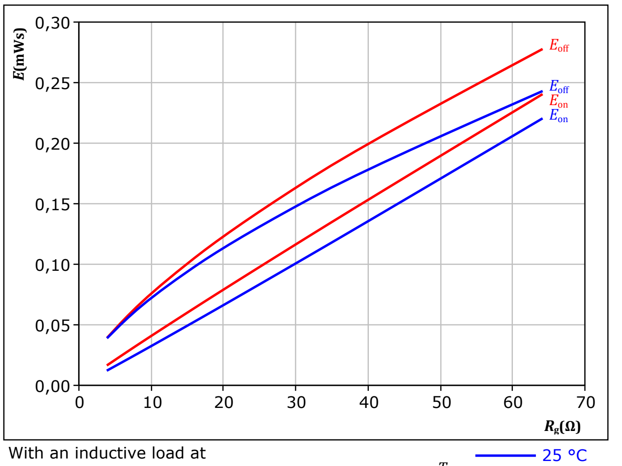
T_j: 25 °C / 125 °C

V_{DS} =	400	V
V_{GS} =	0/10	V
R_{gon} =	16	Ω
R_{goff} =	16	Ω

figure 19. MOSFET

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

$E = f(R_g)$



With an inductive load at

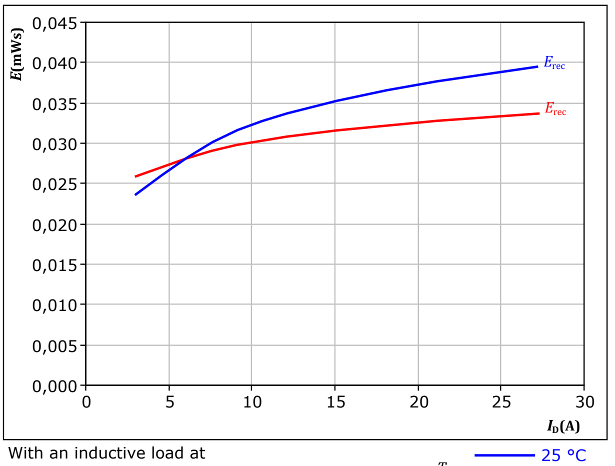
T_j: 25 °C / 125 °C

V_{DS} =	400	V
V_{GS} =	0/10	V
I_D =	15	A

figure 20. FWD

Typical reverse recovered energy loss as a function of drain current

$E_{rec} = f(I_D)$



With an inductive load at

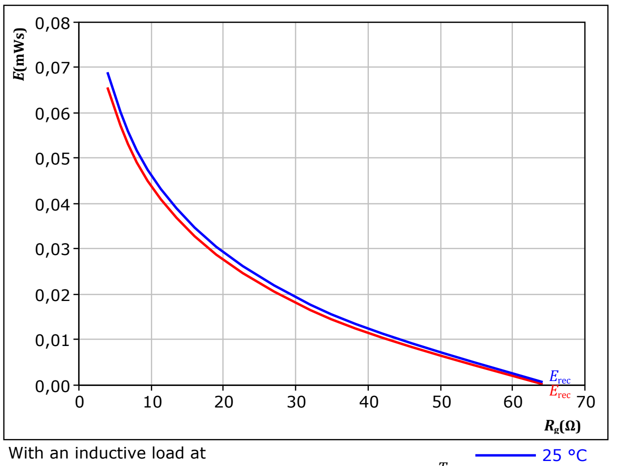
T_j: 25 °C / 125 °C

V_{DS} =	400	V
V_{GS} =	0/10	V
R_{gon} =	16	Ω

figure 21. 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

T_j: 25 °C / 125 °C

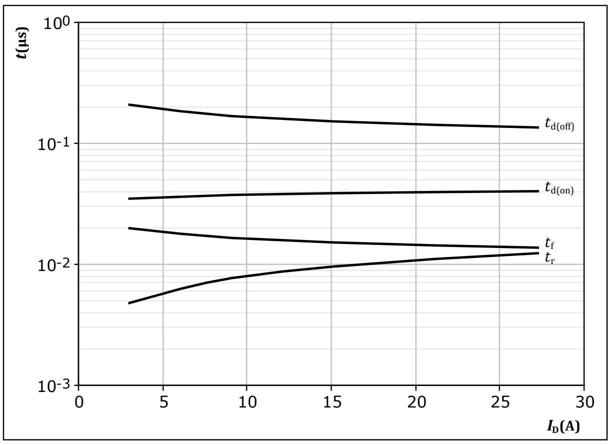
V_{DS} =	400	V
V_{GS} =	0/10	V
I_D =	15	A

PFC Switching Characteristics

figure 22. **MOSFET**

Typical switching times as a function of drain current

t = f(I_D)



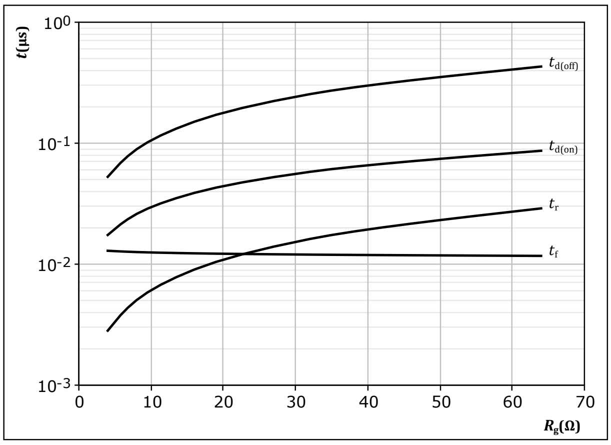
With an inductive load at

T_j =	125	°C
V_{DS} =	400	V
V_{GS} =	0/10	V
R_{gon} =	16	Ω
R_{goff} =	16	Ω

figure 23. **MOSFET**

Typical switching times as a function of MOSFET turn on gate resistor

t = f(R_g)



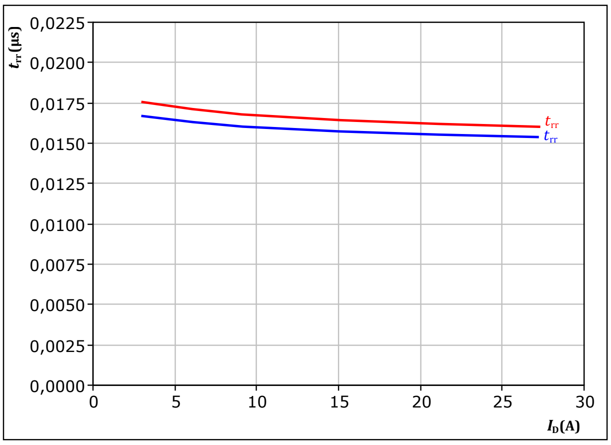
With an inductive load at

T_j =	125	°C
V_{DS} =	400	V
V_{GS} =	0/10	V
I_D =	15	A

figure 24. **FWD**

Typical reverse recovery time as a function of drain current

t_{rr} = f(I_D)



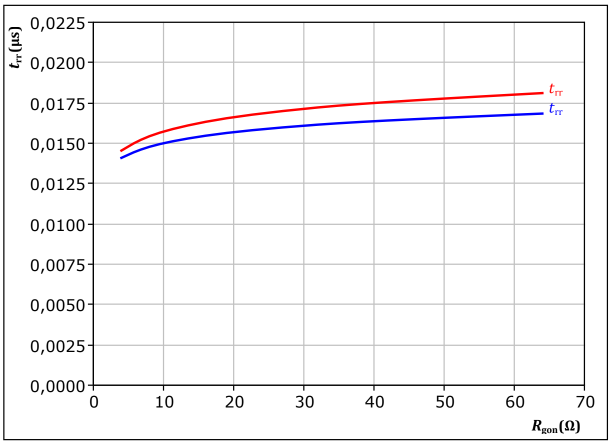
At			
	V_{DS} =	400	V
	V_{GS} =	0/10	V
	R_{gon} =	16	Ω

T_j: 25 °C, 125 °C

figure 25. **FWD**

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

t_{rr} = f(R_{gon})



At			
	V_{DS} =	400	V
	V_{GS} =	0/10	V
	I_D =	15	A

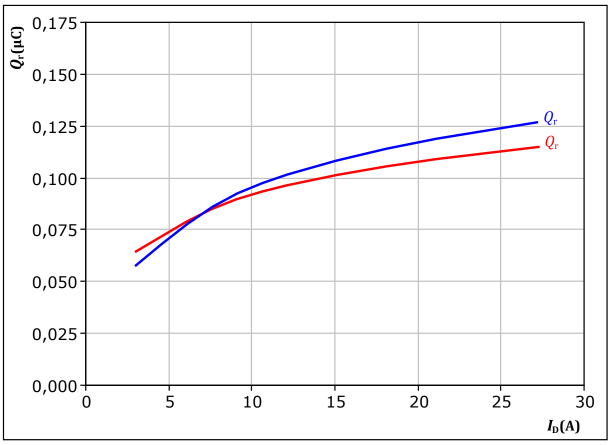
T_j: 25 °C, 125 °C

PFC Switching Characteristics

figure 26. **FWD**

Typical recovered charge as a function of drain current

$Q_r = f(I_D)$

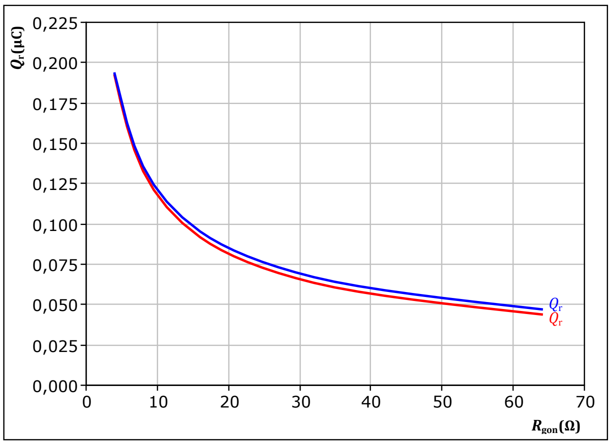


At				
V_{DS} =	400	V	T_j:	25 °C
V_{GS} =	0/10	V		125 °C
R_{gon} =	16	Ω		

figure 27. **FWD**

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

$Q_r = f(R_{gon})$

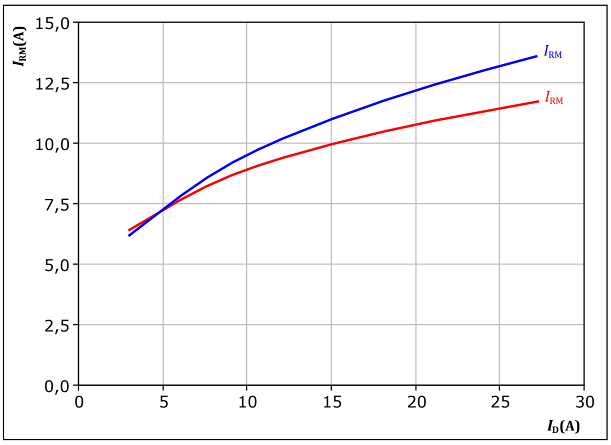


At				
V_{DS} =	400	V	T_j:	25 °C
V_{GS} =	0/10	V		125 °C
I_D =	15	A		

figure 28. **FWD**

Typical peak reverse recovery current as a function of drain current

$I_{RM} = f(I_D)$

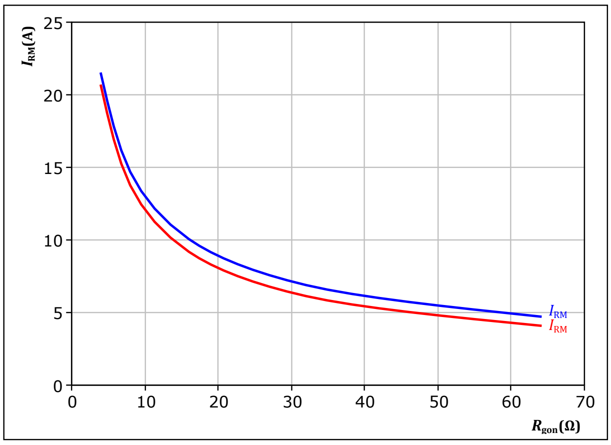


At				
V_{DS} =	400	V	T_j:	25 °C
V_{GS} =	0/10	V		125 °C
R_{gon} =	16	Ω		

figure 29. **FWD**

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

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



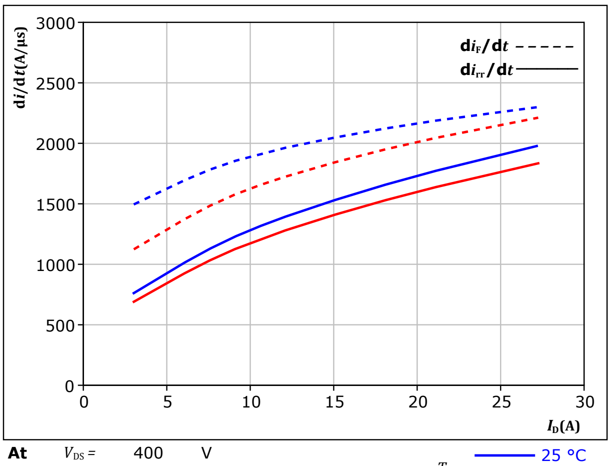
At				
V_{DS} =	400	V	T_j:	25 °C
V_{GS} =	0/10	V		125 °C
I_D =	15	A		

PFC Switching Characteristics

figure 30. **FWD**

Typical rate of fall of forward and reverse recovery current as a function of drain current

di_F/dt, di_{rr}/dt = f(I_D)

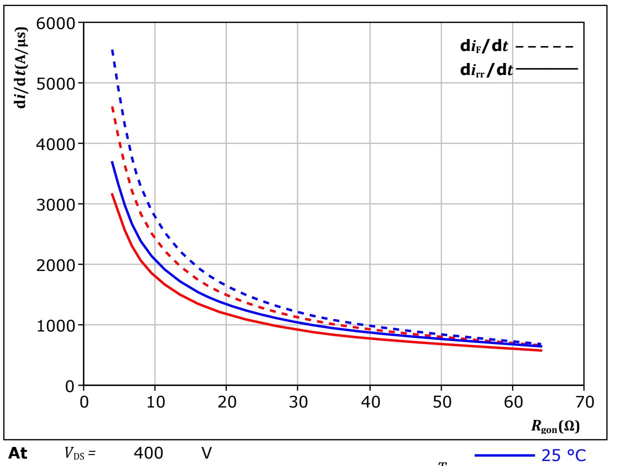


At				
	V_{DS} =	400	V	T_j: 25 °C
	V_{GS} =	0/10	V	125 °C
	R_{gon} =	16	Ω	

figure 31. **FWD**

Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor

di_F/dt, di_{rr}/dt = f(R_{gon})

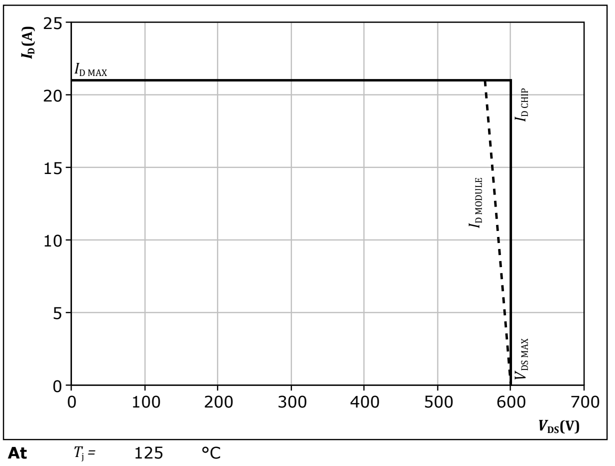


At				
	V_{DS} =	400	V	T_j: 25 °C
	V_{GS} =	0/10	V	125 °C
	I_D =	15	A	

figure 32. **MOSFET**

Reverse bias safe operating area

I_D = f(V_{DS})



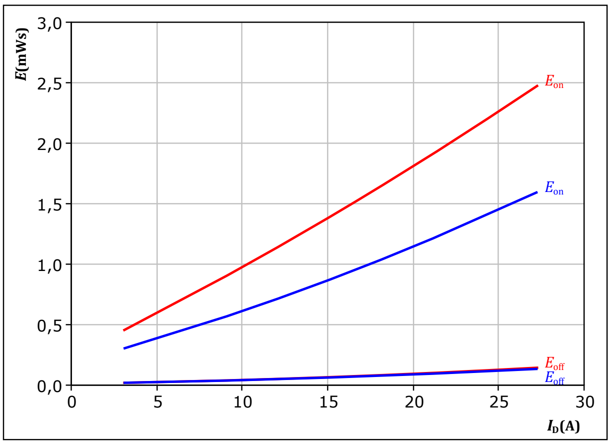
At			
	T_j =	125	°C
	R_{gon} =	16	Ω
	R_{goff} =	16	Ω

Inverter Switching Characteristics

figure 33. **MOSFET**

Typical switching energy losses as a function of drain current

$E = f(I_D)$



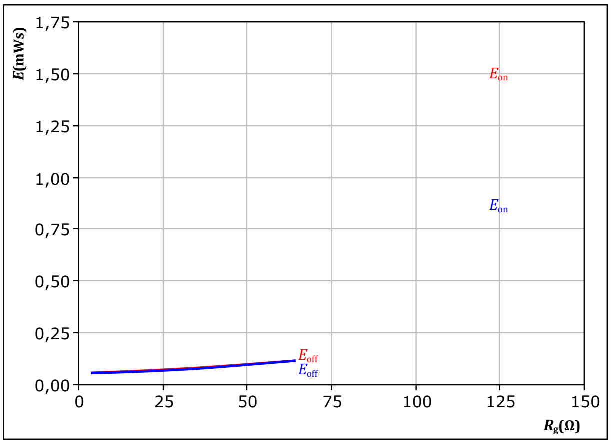
With an inductive load at

V_{DS} =	350	V	T_j:	25 °C
V_{GS} =	-5/10	V		125 °C
R_{gon} =	120	Ω		
R_{goff} =	16	Ω		

figure 34. **MOSFET**

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

$E = f(R_g)$



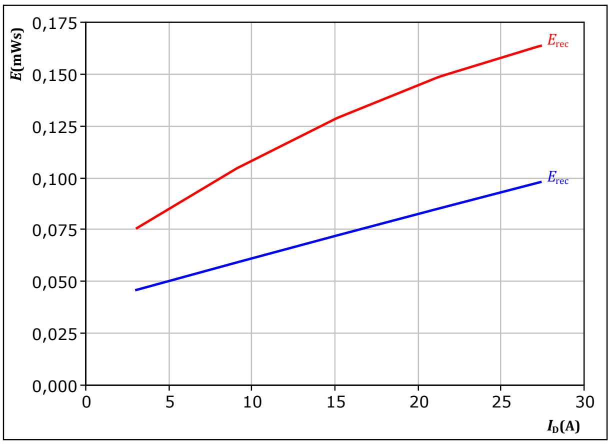
With an inductive load at

V_{DS} =	350	V	T_j:	25 °C
V_{GS} =	-5/10	V		125 °C
I_D =	15	A		

figure 35. **MOSFET**

Typical reverse recovered energy loss as a function of drain current

$E_{rec} = f(I_D)$



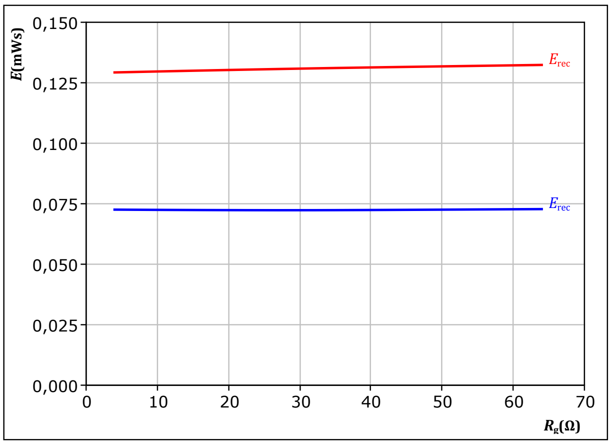
With an inductive load at

V_{DS} =	350	V	T_j:	25 °C
V_{GS} =	-5/10	V		125 °C
R_{gon} =	120	Ω		

figure 36. **MOSFET**

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

$E_{rec} = f(R_g)$



With an inductive load at

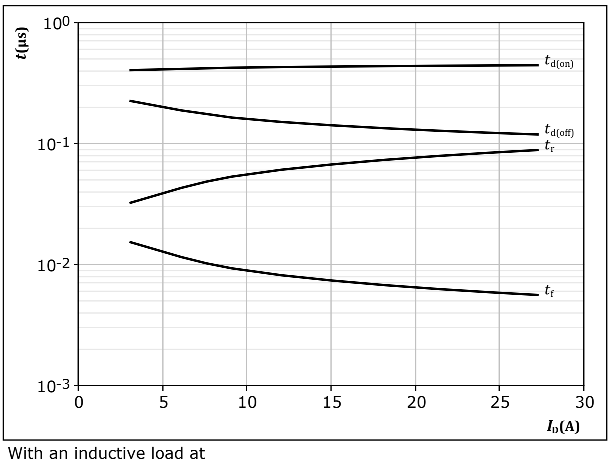
V_{DS} =	350	V	T_j:	25 °C
V_{GS} =	-5/10	V		125 °C
I_D =	15	A		

Inverter Switching Characteristics

figure 37. **MOSFET**

Typical switching times as a function of drain current

$t = f(I_D)$



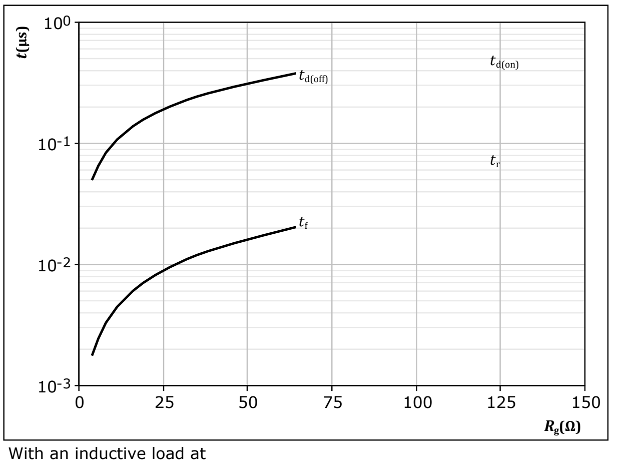
With an inductive load at

T_j =	125	°C
V_{DS} =	350	V
V_{GS} =	-5/10	V
R_{gon} =	120	Ω
R_{goff} =	16	Ω

figure 38. **MOSFET**

Typical switching times as a function of MOSFET turn on gate resistor

$t = f(R_g)$



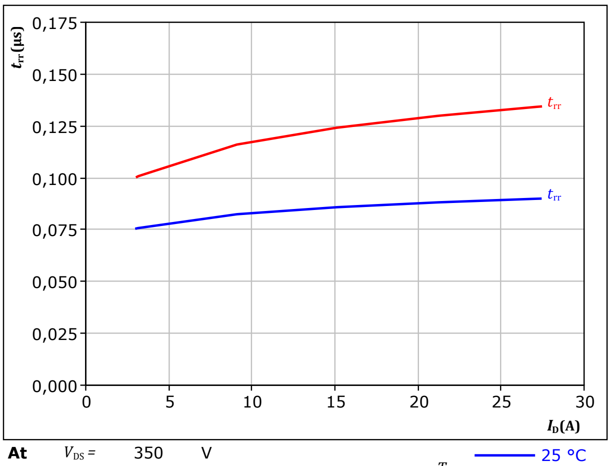
With an inductive load at

T_j =	125	°C
V_{DS} =	350	V
V_{GS} =	-5/10	V
I_D =	15	A

figure 39. **MOSFET**

Typical reverse recovery time as a function of drain current

$t_{rr} = f(I_D)$



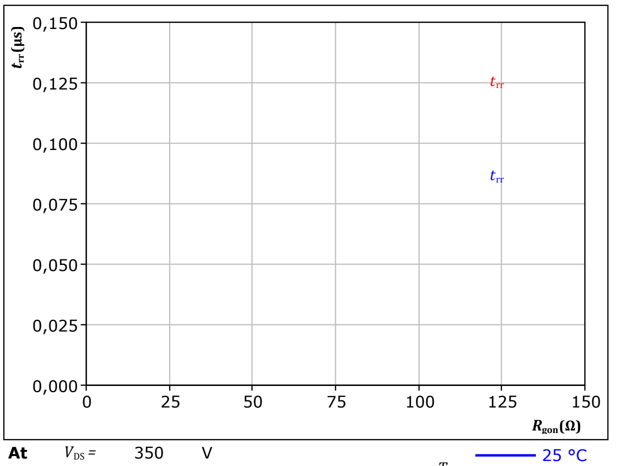
At			
	V_{DS} =	350	V
	V_{GS} =	-5/10	V
	R_{gon} =	120	Ω

T_j: 25 °C, 125 °C

figure 40. **MOSFET**

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

$t_{rr} = f(R_{gon})$



At			
	V_{DS} =	350	V
	V_{GS} =	-5/10	V
	I_D =	15	A

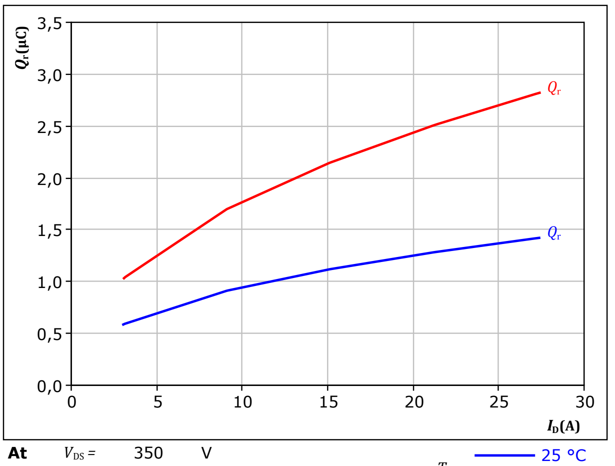
T_j: 25 °C, 125 °C

Inverter Switching Characteristics

figure 41. **MOSFET**

Typical recovered charge as a function of drain current

Q_r = f(I_D)

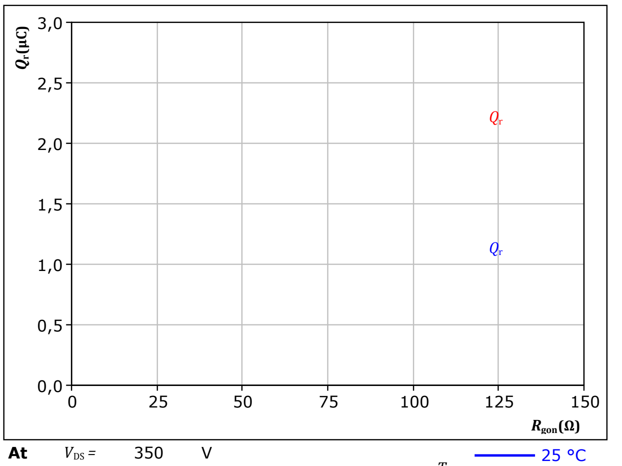


At	V_{DS} =	350	V	T_j:	25 °C
	V_{GS} =	-5/10	V		125 °C
	R_{gon} =	120	Ω		

figure 42. **MOSFET**

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

Q_r = f(R_{gon})

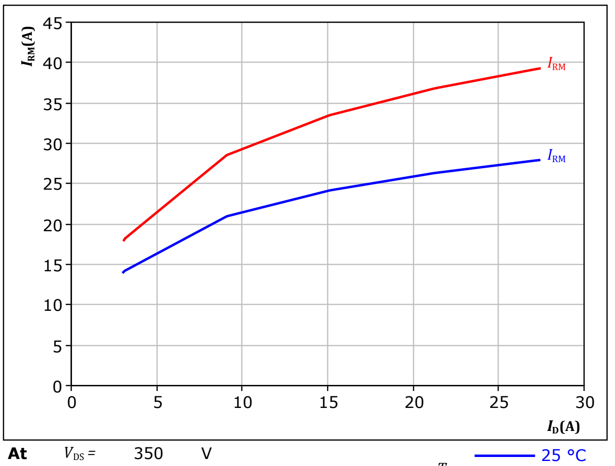


At	V_{DS} =	350	V	T_j:	25 °C
	V_{GS} =	-5/10	V		125 °C
	I_D =	15	A		

figure 43. **MOSFET**

Typical peak reverse recovery current as a function of drain current

I_{RM} = f(I_D)

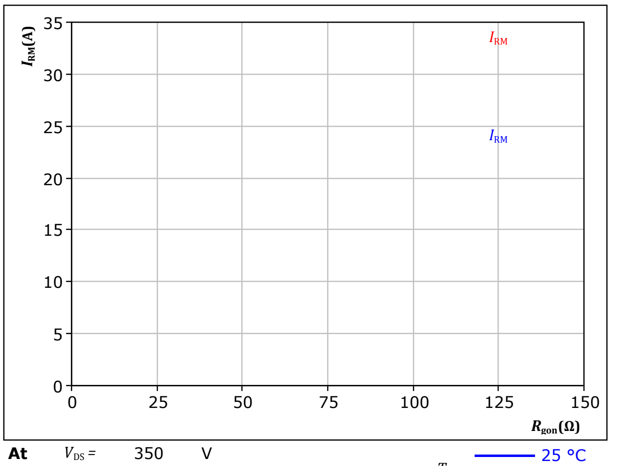


At	V_{DS} =	350	V	T_j:	25 °C
	V_{GS} =	-5/10	V		125 °C
	R_{gon} =	120	Ω		

figure 44. **MOSFET**

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

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



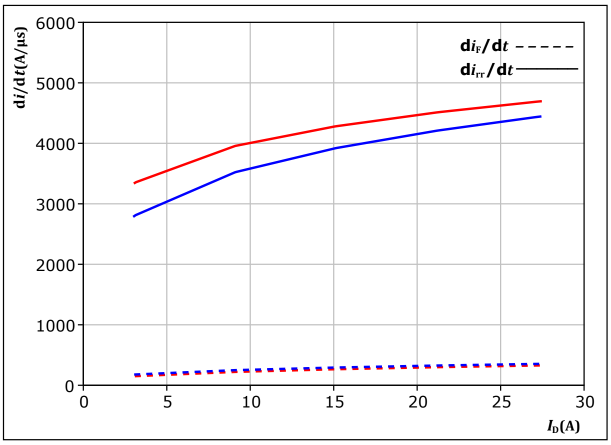
At	V_{DS} =	350	V	T_j:	25 °C
	V_{GS} =	-5/10	V		125 °C
	I_D =	15	A		

Inverter Switching Characteristics

figure 45. **MOSFET**

Typical rate of fall of forward and reverse recovery current as a function of drain current

di_F/dt, di_{rr}/dt = f(I_D)

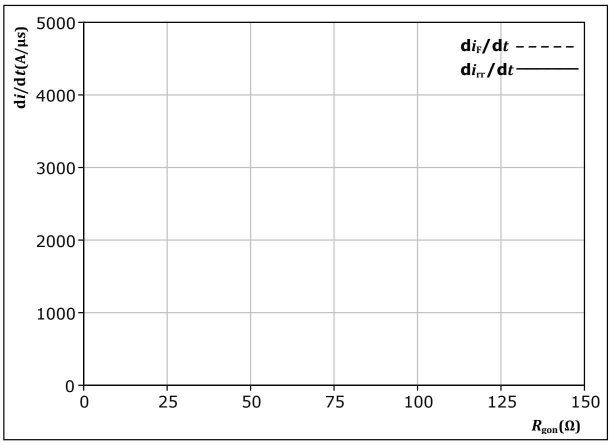


At				
	V_{DS} =	350	V	T_j: 25 °C, 125 °C
	V_{GS} =	-5/10	V	
	R_{gon} =	120	Ω	

figure 46. **MOSFET**

Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor

di_F/dt, di_{rr}/dt = f(R_{gon})

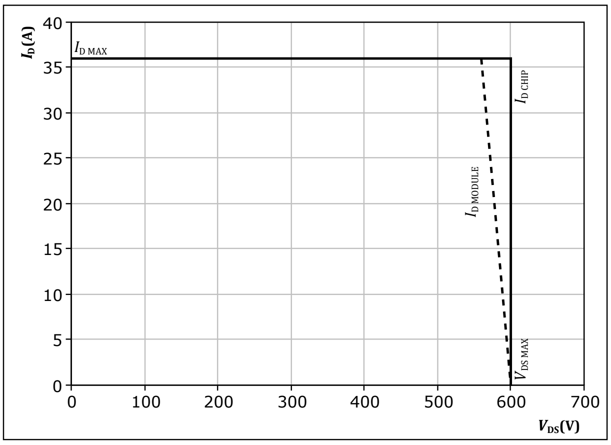


At				
	V_{DS} =	350	V	T_j: 25 °C, 125 °C
	V_{GS} =	-5/10	V	
	I_D =	15	A	

figure 47. **MOSFET**

Reverse bias safe operating area

I_D = f(V_{DS})



At			
	T_j =	125	°C
	R_{gon} =	120	Ω
	R_{goff} =	16	Ω

Switching Definitions

figure 48. **MOSFET**

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

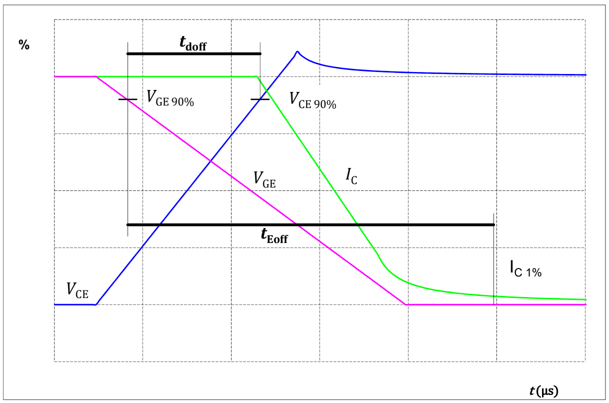


figure 49. **MOSFET**

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

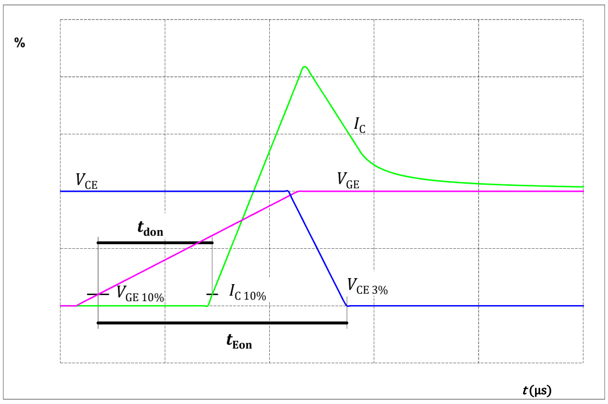


figure 50. **MOSFET**

Turn-off Switching Waveforms & definition of t_f

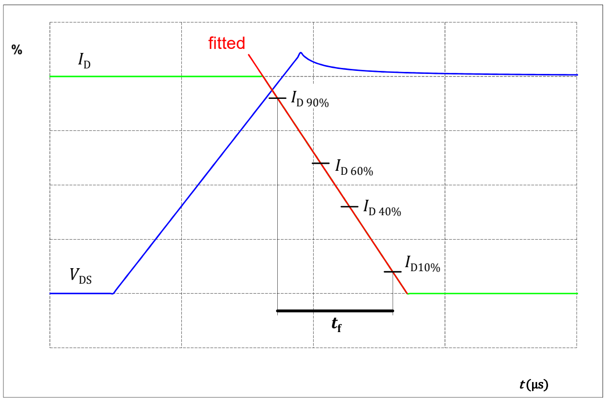
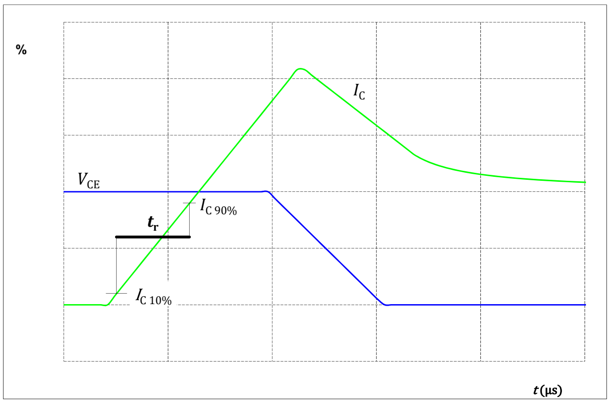


figure 51. **MOSFET**

Turn-on Switching Waveforms & definition of t_r



Switching Definitions

figure 52. **FWD**

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

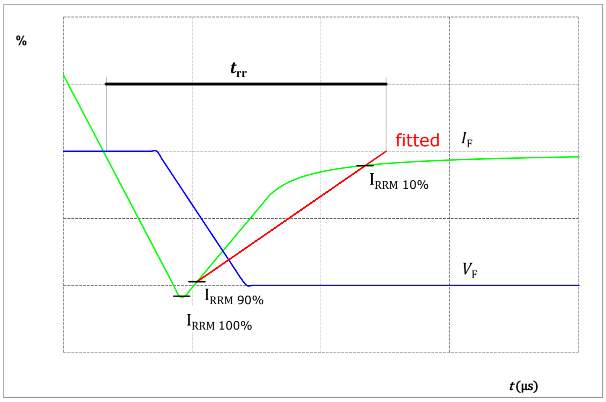


figure 53. **FWD**

Turn-on Switching Waveforms & definition of t_{Qrr} (t_{Qrr} = integrating time for Q_{rr})

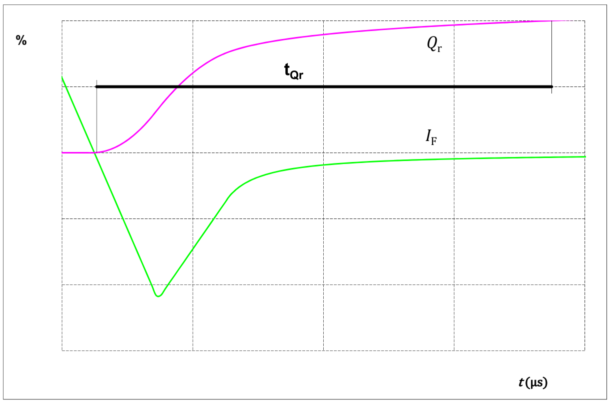
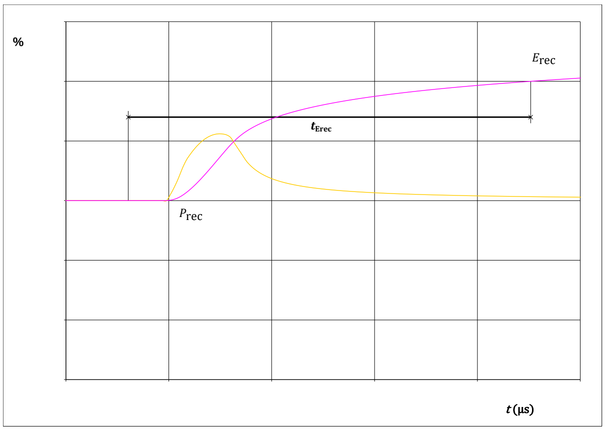


figure 54. **FWD**

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



Ordering Code

Version	Ordering Code
Without thermal paste	10-FY07ZAA055F7-L513B78
With thermal paste (5,2 W/mK, PTM6000HV)	10-FY07ZAA055F7-L513B78-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-FY07ZAA055F7-L513B78-/3/

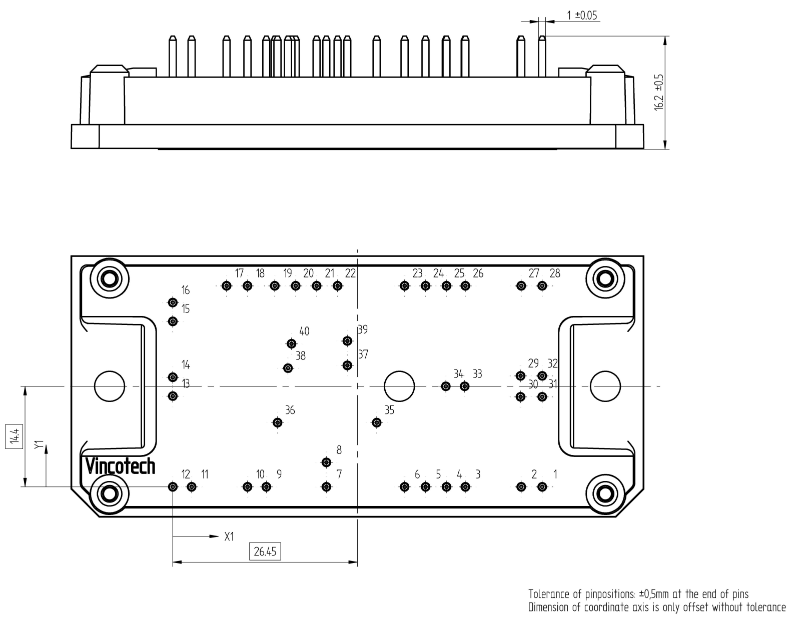
Marking

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

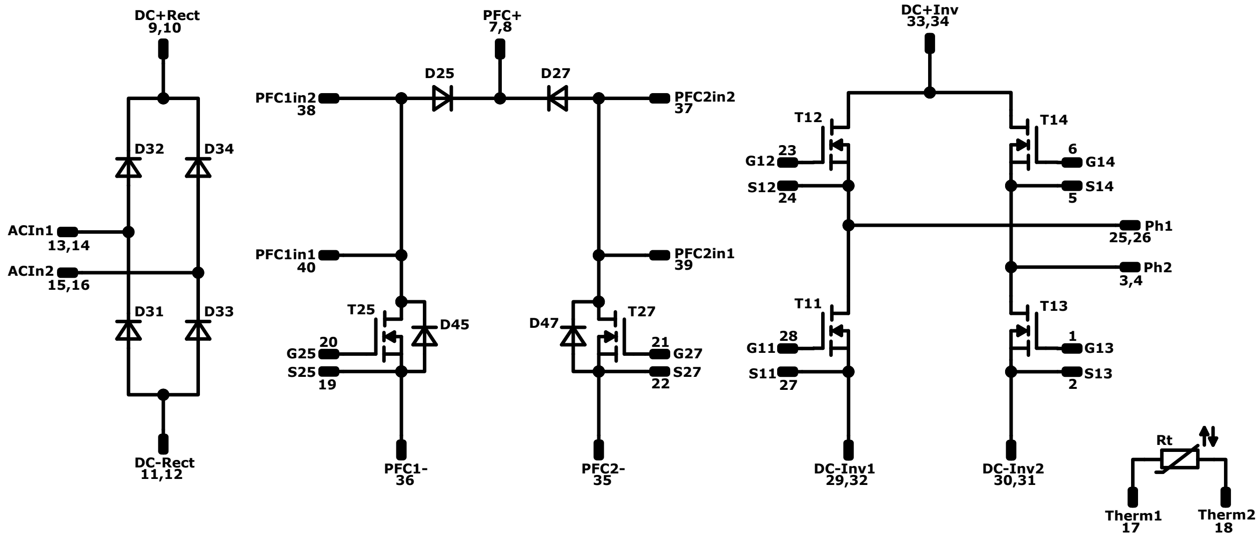
Outline

Pin table [mm]

Pin	X	Y	Function
1	52,9	0	G13
2	49,9	0	S13
3	41,9	0	Ph2
4	39,2	0	Ph2
5	36,2	0	S14
6	33,2	0	G14
7	22	0	PFC+
8	22	3,5	PFC+
9	13,4	0	DC+Rect
10	10,7	0	DC+Rect
11	2,7	0	DC-Rect
12	0	0	DC-Rect
13	0	13	ACIn1
14	0	15,7	ACIn1
15	0	23,7	ACIn2
16	0	26,4	ACIn2
17	7,7	28,8	Therm1
18	10,7	28,8	Therm2
19	14,6	28,8	S25
20	17,6	28,8	G25
21	20,6	28,8	G27
22	23,6	28,8	S27
23	33,2	28,8	G12
24	36,2	28,8	S12
25	39,2	28,8	Ph1
26	41,9	28,8	Ph1
27	49,9	28,8	S11
28	52,9	28,8	G11
29	49,8	15,9	DC-Inv1
30	49,8	12,9	DC-Inv2
31	52,9	12,9	DC-Inv2
32	52,9	15,9	DC-Inv1
33	41,8	14,4	DC+Inv
34	39,1	14,4	DC+Inv
35	29,2	9,2	PFC2-
36	15	9,2	PFC1-
37	25	17,4	PFC2in2
38	16,5	17	PFC1in2
39	25	20,9	PFC2in1
40	17	20,5	PFC1in1



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11, T12, T13, T14	MOSFET	600 V	46 mΩ	Inverter Switch	
T25, T27	MOSFET	600 V	77 mΩ	PFC Switch	
D25, D27	FWD	650 V	10 A	PFC Diode	
D45, D47	FWD	650 V	6 A	PFC Sw. Protection Diode	
D31, D32, D33, D34	Rectifier	1600 V	35 A	Rectifier Diode	
Rt	Thermistor			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 1 packages see vincotech.com website.

Package data
Package data for *flow* 1 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 certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-FY07ZAA055F7-L513B78-D1-14	14 Oct. 2022		