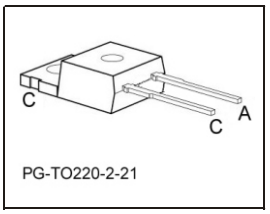
Fast Switching EmCon Diode

Feature

- 1200 V EmCon technology
- Fast recovery
- Soft switching
- Low reverse recovery charge
- Low forward voltage
- Easy paralleling
- Pb-free lead plating; RoHS compliant
- Qualified according to JEDEC[0] for target applications

Product Summary

V_{RRM}	1200	V
I_F	9	A
V_F	1.65	V
T_{jmax}	150	°C



PG-TO220-2-21

Type	Package	Marking	Pin 1	PIN 2	
IDH09E120	PG-TO220-2-21	D09E120	C	A	-

Maximum Ratings, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	1200	V
Continous forward current	I_F		A
T_C=25°C		23	
T_C=90°C		14.4	
Surge non repetitive forward current T_C=25°C, t_p=10 ms, sine halfwave	I_{FSM}	50	
Maximum repetitive forward current T_C=25°C, t_p limited by T_{jmax}, D=0.5	I_{FRM}	36	
Power dissipation	P_{tot}		W
T_C=25°C		69	
T_C=90°C		33	
Operating and storage temperature	T_j , T_{stg}	-55...+150	°C
Soldering temperature wavesoldering, 1.6mm (0.063 in.) from case for 10s	T_S	260	°C

[0] J-STD20 and JESD22

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - case	R_{thJC}	-	-	1.8	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	62	

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Reverse leakage current	I_R				µA
V_R=1200V, T_j=25°C		-	-	100	
V_R=1200V, T_j=150°C		-	-	700	
Forward voltage drop	V_F				V
I_F=9A, T_j=25°C		-	1.65	2.15	
I_F=9A, T_j=150°C		-	1.7	-	

[1]Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm² (one layer, 70 µm thick) copper area for drain connection. PCB is vertical without blown air.

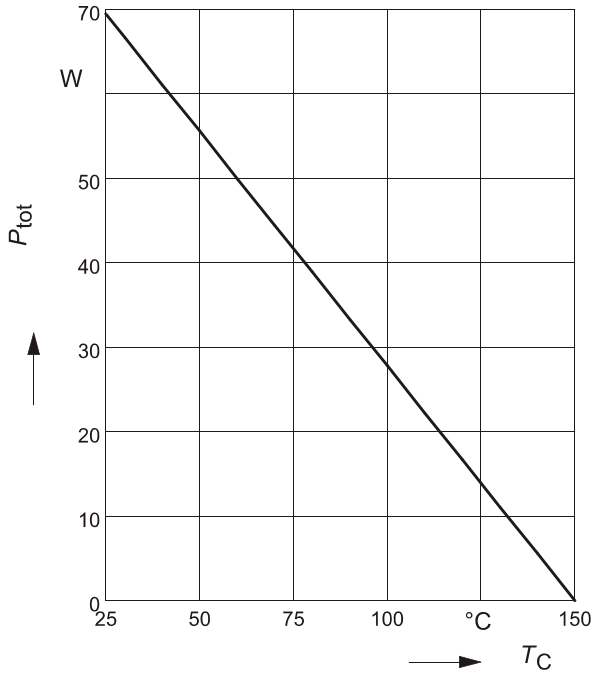
Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Reverse recovery time	t_{rr}				ns
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=25°C		-	140	-	
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=125°C		-	200	-	
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=150°C		-	210	-	
Peak reverse current	I_{rrm}				A
V_R=800V, I_F = 9 A, di_F/dt=750A/µs, T_j=25°C		-	13.3	-	
V_R=800V, I_F =9A, di_F/dt=750A/µs, T_j=125°C		-	16.1	-	
V_R=800V, I_F =9A, di_F/dt=750A/µs, T_j=150°C		-	16.5	-	
Reverse recovery charge	Q_{rr}				nC
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=25°C		-	950	-	
V_R=800V, I_F =9A, di_F/dt=750A/µs, T_j=125°C		-	1470	-	
V_R=800V, I_F =9A, di_F/dt=750A/µs, T_j=150°C		-	1600	-	
Reverse recovery softness factor	S				
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=25°C		-	5.4	-	
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=125°C		-	6.5	-	
V_R=800V, I_F=9A, di_F/dt=750A/µs, T_j=150°C		-	6.6	-	

1 Power dissipation

$P_{tot} = f(T_C)$

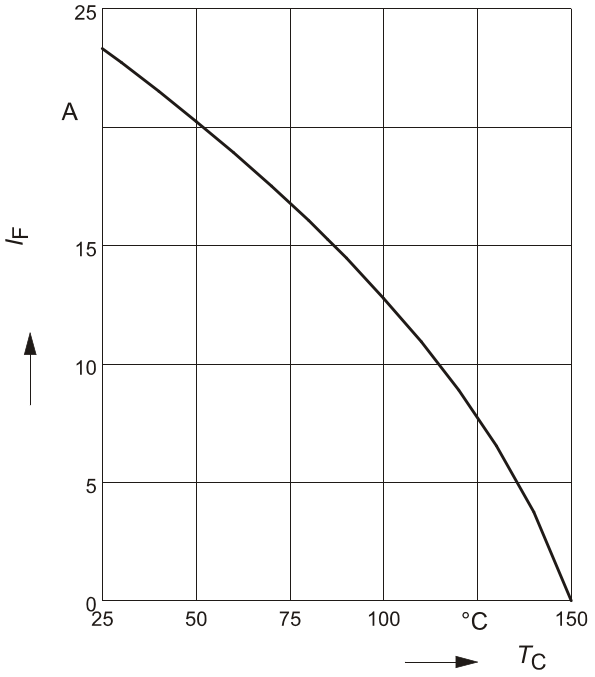
parameter: $T_j \leq 150$ °C



2 Diode forward current

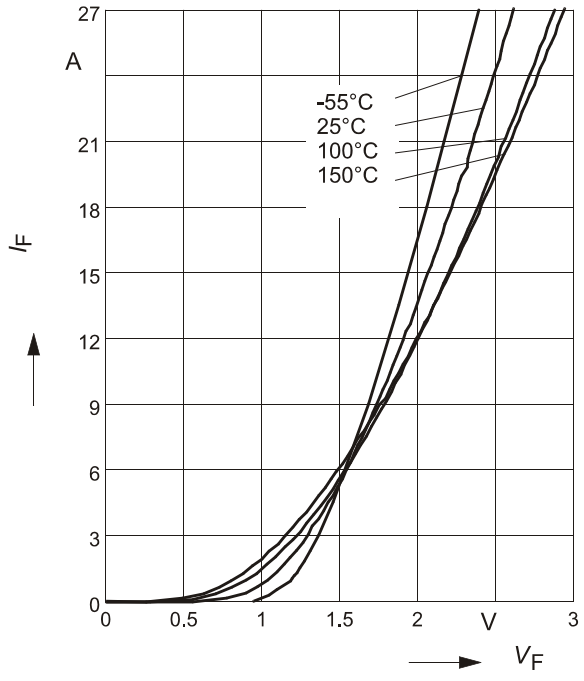
$I_F = f(T_C)$

parameter: $T_j \leq 150$°C



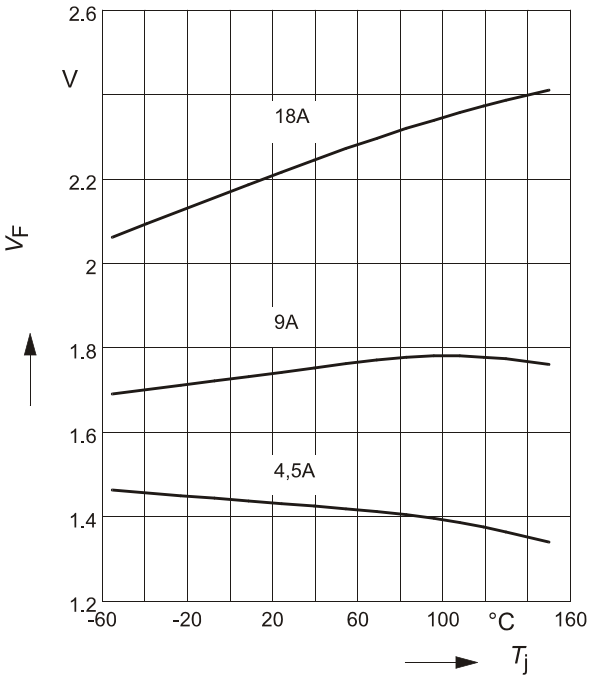
3 Typ. diode forward current

$I_F = f(V_F)$



4 Typ. diode forward voltage

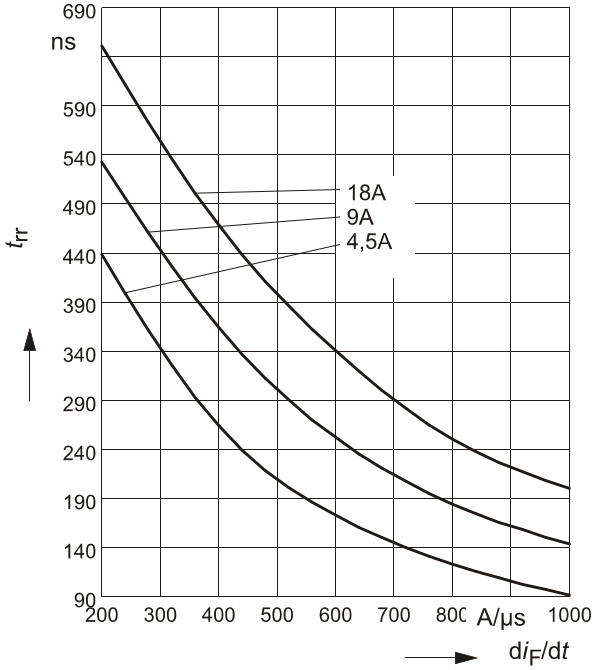
$V_F = f(T_j)$



5 Typ. reverse recovery time

$t_{rr} = f\,(di_F/dt)$

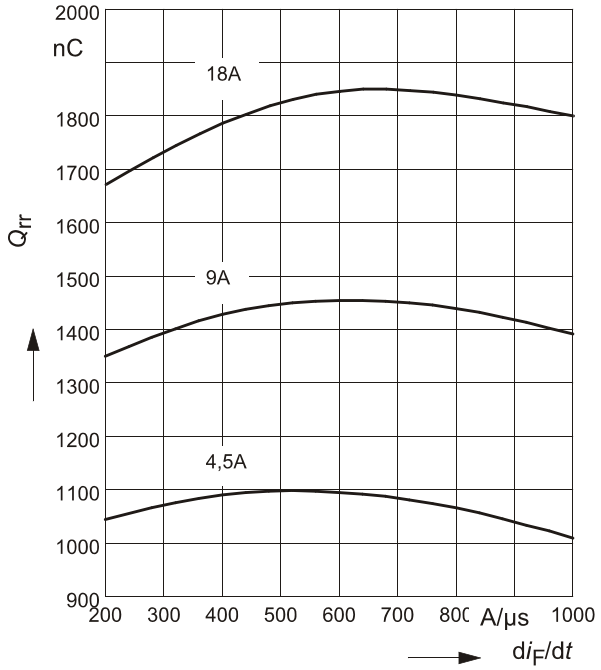
parameter: V_R = 800V, T_j = 125°C



6 Typ. reverse recovery charge

$Q_{rr}=f(di_F/dt)$

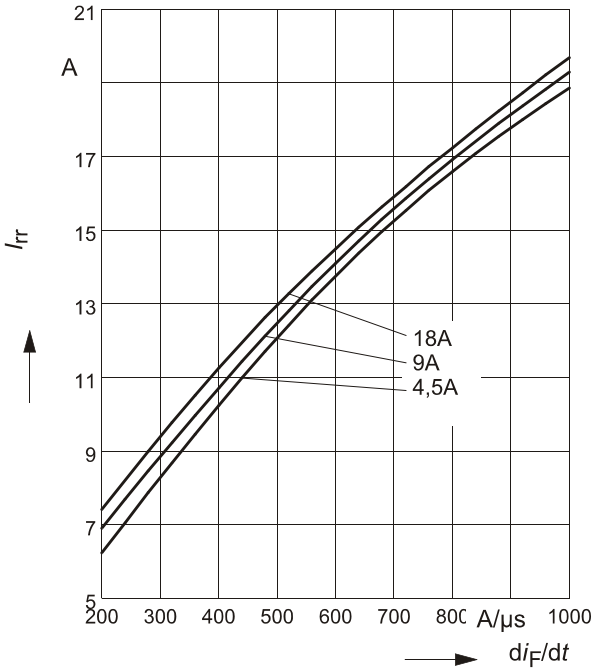
parameter: V_R = 800V, T_j = 125 °C



7 Typ. reverse recovery current

$I_{rr} = f\,(di_F/dt)$

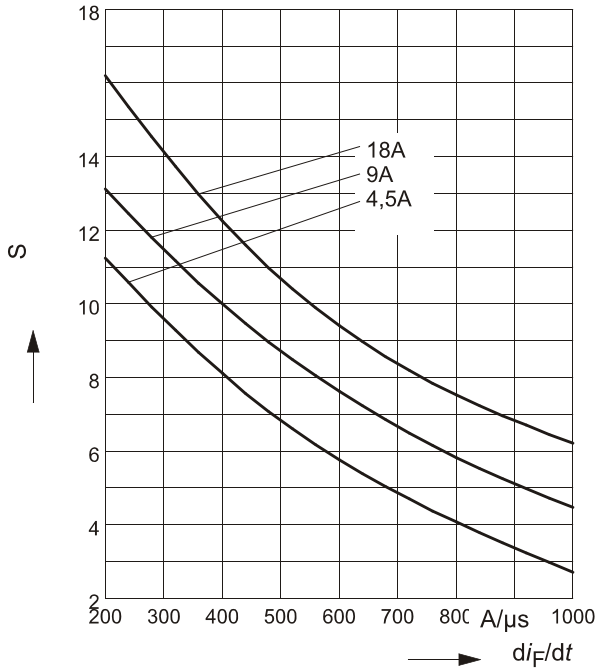
parameter: V_R = 800V, T_j = 125°C



8 Typ. reverse recovery softness factor

S = f(di_F/dt)

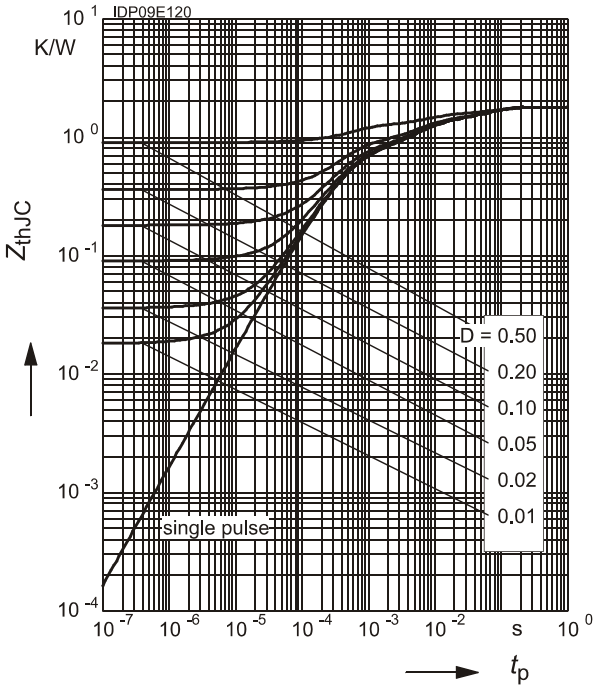
parameter: V_R = 800V, T_j = 125°C



9 Max. transient thermal impedance

$Z_{thJC} = f(t_p)$

parameter : $D = t_p/T$



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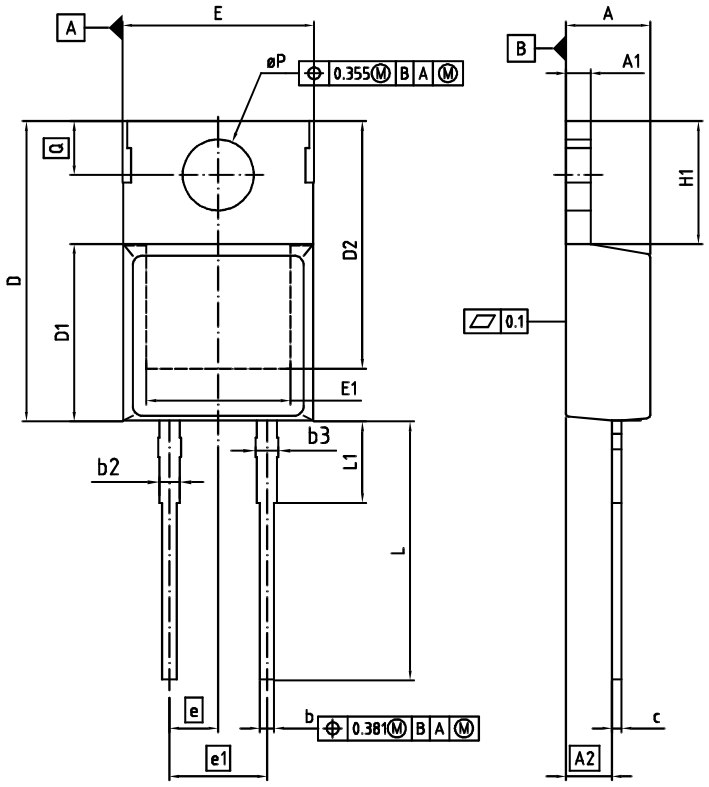

symbol	dimensions			
	[mm]		[inch]	
	min	max	min	max
A	4.191	4.699	0.165	0.185
A1	1.219	1.321	0.048	0.052
A2	2.387	2.489	0.094	0.098
b	0.635	0.889	0.025	0.035
b2	1.143	1.397	0.045	0.055
b3	1.143	1.651	0.045	0.065
c	0.331	0.635	0.013	0.025
D	15.113	15.621	0.595	0.615
D1	9.017	9.271	0.355	0.365
D2	13.737	14.245	0.541	0.561
E	9.677	9.931	0.381	0.391
E1	8.28	8.788	0.324	0.346
e	2.54		0.1	
e1	5.029	5.131	0.198	0.202
H1	6.096	6.35	0.24	0.25
L	12.802	13.31	0.504	0.524
L1	3.048	3.302	0.12	0.13
P	3.632	3.734	0.143	0.147
Q	2.54	3.048	0.1	0.12

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