

XPT IGBT

tentative

$$V_{CES} = 1200V$$

$$I_{C25} = 32A$$

$$V_{CE(sat)} = 1.8V$$

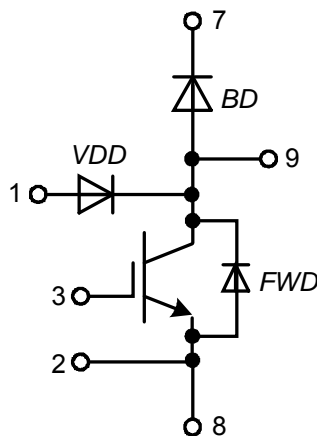
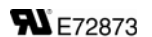
ISOPLUS™ Surface Mount Power Device
 Boost Topology
 XPT IGBT

Part number

IXA20RG1200DHGLB



Backside: isolated



Features / Advantages:

- XPT IGBT
 - low saturation voltage
 - positive temperature coefficient for easy paralleling
 - fast switching
 - short tail current for optimized performance in resonant circuits
- Sonic™ diode
 - fast reverse recovery
 - low operating forward voltage
 - low leakage current
 - low temperature dependency of reverse recovery
- Vcesat detection diode (VDD)
 - integrated into package
 - very fast diode

Applications:

- AC drives
 - brake chopper
- PFC
 - boost chopper
- Switched reluctance drives

Package: SMPD

- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling
- Isolation Voltage: 3000 V~

Free Wheeling Diode FWD				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage					1200	V	
V_{RRM}	max. repetitive reverse blocking voltage					1200	V	
I_R	reverse current, drain current	$V_R = 1200$ V	$T_{VJ} = 25^\circ\text{C}$			25	μA	
		$V_R = 1200$ V	$T_{VJ} = 125^\circ\text{C}$			0.4	mA	
V_F	forward voltage drop	$I_F = 20$ A	$T_{VJ} = 25^\circ\text{C}$			2.20	V	
			$T_{VJ} = 125^\circ\text{C}$			2.20	V	
		$I_F = 40$ A	$T_{VJ} = 25^\circ\text{C}$					
			$T_{VJ} = 125^\circ\text{C}$					
I_{FAV}	average forward current	$T_C = 80^\circ\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^\circ\text{C}$			18	A	
V_{FO}	threshold voltage	} for power loss calculation only				1.29	V	
r_F	slope resistance					41	m Ω	
R_{thJC}	thermal resistance junction to case					1.35	K/W	
R_{thCH}	thermal resistance case to heatsink				0.40		K/W	
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		93	W	
I_{FSM}	max. forward surge current	$t = 10$ ms; (50 Hz), sine; $V_R = 0$ V		$T_{VJ} = 45^\circ\text{C}$		150	A	
C_J	junction capacitance	$V_R = 400$ V $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		10	pF	

VCEsat Detection Diode VDD				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse blocking voltage					1200	V
I_R	reverse current, drain current	$V_{R/D} = 1200$ V	$T_{VJ} = 25^\circ\text{C}$			2	μA
		$V_{R/D} = 1200$ V	$T_{VJ} = 125^\circ\text{C}$			0.03	mA
V_F	forward voltage drop	$I_F = 1$ A	$T_{VJ} = 25^\circ\text{C}$			2.20	V
			$T_{VJ} = 125^\circ\text{C}$			1.80	V
V_{FO}	threshold voltage	} for power loss calculation only				1.30	V
r_F	slope resistance					390	m Ω
C_J	junction capacitance	$V_R = 400$ V; $f = 1$ MHz		$T_{VJ} = 25^\circ\text{C}$		tbd	pF
I_{RM}	max. reverse recovery current	} $V_R = 100$ V; $I_F = 1$ A $-di/dt = 100$ A/ μs		$T_{VJ} = 25^\circ\text{C}$		2.3	A
t_{rr}	reverse recovery time			$T_{VJ} = 125^\circ\text{C}$		tbd	A
				$T_{VJ} = 25^\circ\text{C}$		40	ns
				$T_{VJ} = 125^\circ\text{C}$		tbd	ns

Boost IGBT				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{CES}	collector emitter voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V	
V_{GES}	max. DC gate voltage				± 20	V	
V_{GEM}	max. transient collector gate voltage				± 30	V	
I_{C25}	collector current	$T_C = 25^{\circ}\text{C}$			32	A	
I_{C80}		$T_C = 80^{\circ}\text{C}$			23	A	
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$			125	W	
$V_{CE(sat)}$	collector emitter saturation voltage	$I_C = 15\text{ A}; V_{GE} = 15\text{ V}$			1.8	V	
					2	V	
$V_{GE(th)}$	gate emitter threshold voltage	$I_C = 0.6\text{ mA}; V_{CE} = V_{CE}$	5.4	5.9	6.5	V	
I_{CES}	collector emitter leakage current	$V_{CE} = V_{CES}; V_{GE} = 0\text{ V}$			0.1	mA	
					0.1	mA	
I_{GES}	gate emitter leakage current	$V_{GE} = \pm 20\text{ V}$			500	nA	
$Q_{G(on)}$	total gate charge	$V_{CE} = 600\text{ V}; V_{GE} = 15\text{ V}; I_C = 15\text{ A}$			48	nC	
$t_{d(on)}$	turn-on delay time	inductive load $V_{CE} = 600\text{ V}; I_C = 15\text{ A}$ $V_{GE} = \pm 15\text{ V}; R_G = 56\ \Omega$					
t_r	current rise time						
$t_{d(off)}$	turn-off delay time						
t_f	current fall time						
E_{on}	turn-on energy per pulse						
E_{off}	turn-off energy per pulse						
R_{BSOA}	reverse bias safe operating area	$V_{GE} = \pm 15\text{ V}; R_G = 56\ \Omega$					
I_{CM}		$V_{CEmax} = 1200\text{ V}$			45	A	
R_{SCSOA}	short circuit safe operating area	$V_{CEmax} = 1200\text{ V}$					
t_{sc}	short circuit duration	$V_{CE} = 900\text{ V}; V_{GE} = \pm 15\text{ V}$			10	μs	
I_{sc}	short circuit current	$R_G = 56\ \Omega; \text{non-repetitive}$			60	A	
R_{thJC}	thermal resistance junction to case				1	K/W	
R_{thCH}	thermal resistance case to heatsink				0.30	K/W	
Boost Diode BD							
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V	
I_{F25}	forward current	$T_C = 25^{\circ}\text{C}$			27	A	
I_{F80}		$T_C = 80^{\circ}\text{C}$			18	A	
V_F	forward voltage	$I_F = 20\text{ A}$			2.20	V	
					1.90	V	
I_R	reverse current	$V_R = V_{RRM}$			0.03	mA	
					0.12	mA	
Q_{rr}	reverse recovery charge	$V_R = 600\text{ V}$ $-di_F/dt = 400\text{ A}/\mu\text{s}$ $I_F = 20\text{ A}; V_{GE} = 0\text{ V}$					
I_{RM}	max. reverse recovery current						
t_{rr}	reverse recovery time						
E_{rec}	reverse recovery energy						
R_{thJC}	thermal resistance junction to case				1.35	K/W	
R_{thCH}	thermal resistance case to heatsink				0.4	K/W	

tentative

Package SMPD		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			100	A
T_{stg}	storage temperature		-55		150	°C
T_{vj}	virtual junction temperature		-55		150	°C
Weight				8.5		g
F_C	mounting force with clip		40		130	N
V_{ISOL}	isolation voltage	t = 1 second	3000			V
		t = 1 minute	2500			V
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	1.6			mm
		terminal to backside	4.0			mm



Part number

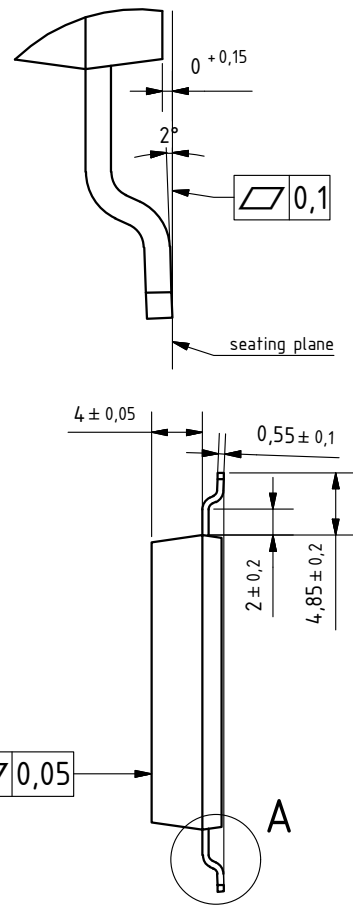
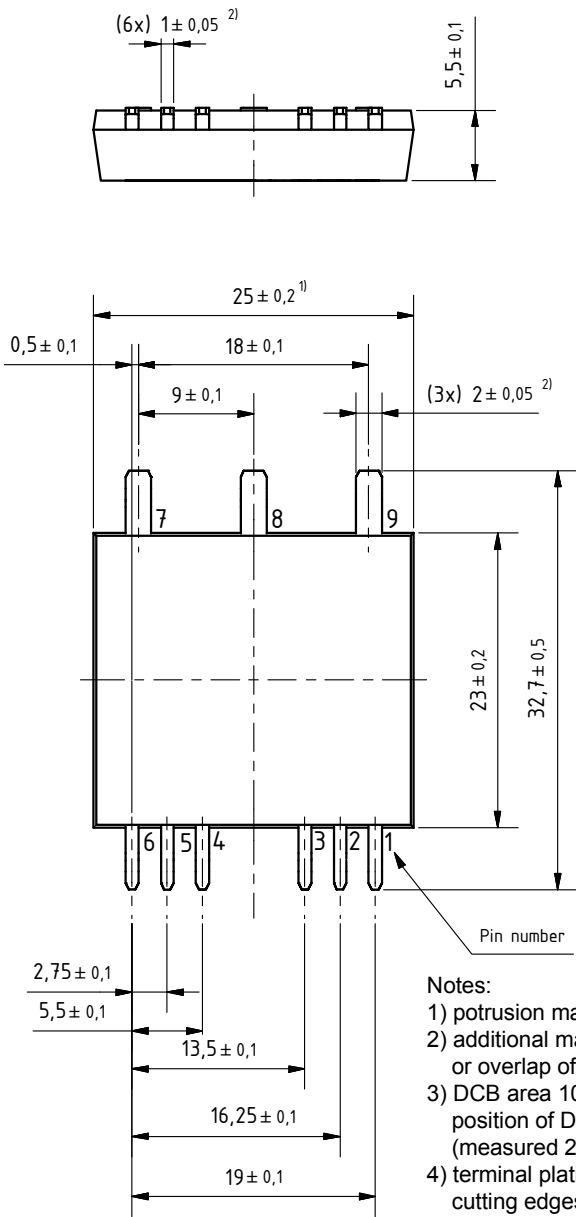
- I = IGBT
- X = XPT IGBT
- A = Gen 1 / std
- 20 = Current Rating [A]
- RG = boost configuration
- 1200 = Reverse Voltage [V]
- D = IGBT
- H = XPT IGBT
- G = Gen 1 / std
- LB = SMPD-B

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	IXA20RG1200DHGLB	IXA20RG1200DHGLB	Blister	45	512349
Alternative	IXA20RG1200DHGLB-TRR	IXA20RG1200DHGLB	Tape & Reel	200	512370

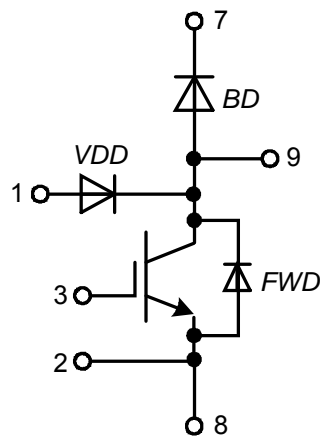
Similar Part	Package	Voltage class
IXA30RG1200DHGLB	SMPD-B	1200
IXA40RG1200DHGLB	SMPD-B	1200

Outlines SMPD

A (8 : 1)



- Notes:
- 1) protrusion may add 0.2 mm max. on each side
 - 2) additional max. 0.05 mm per side by punching misalignment or overlap of dam bar or bending compression
 - 3) DCB area 10 to 50 μ m convex; position of DCB area in relation to plastic rim: \pm 25 μ m (measured 2 mm from Cu rim)
 - 4) terminal plating: 0.2 - 1 μ m Ni + 10 - 25 μ m Sn (gal v.) cutting edges may be partially free of plating



Boost IGBT

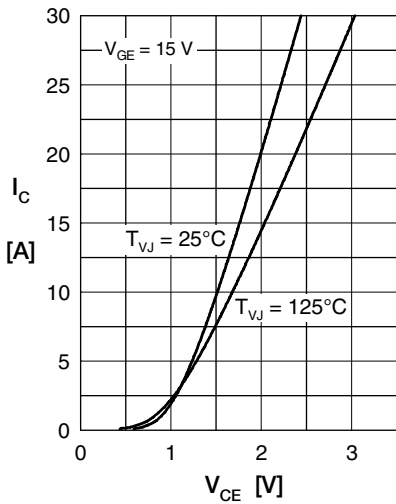


Fig. 1 Typ. output characteristics

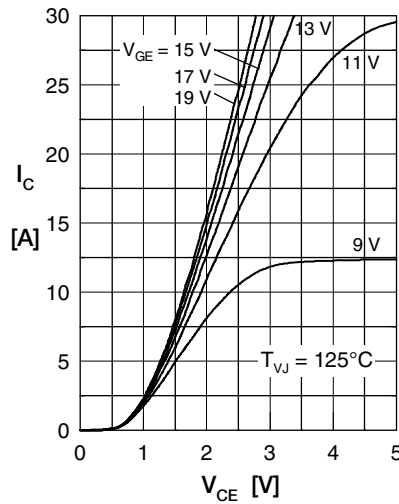


Fig. 2 Typ. output characteristics



Fig. 3 Typ. transfer characteristics



Fig. 4 Typ. turn-on gate charge

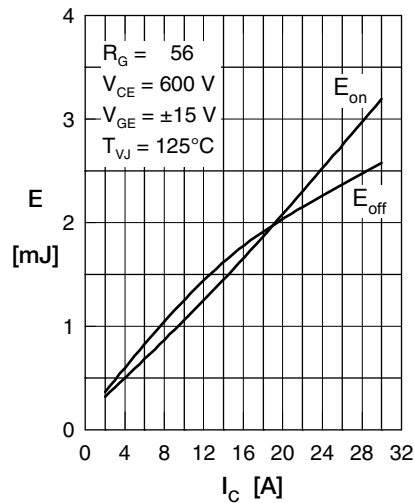


Fig. 5 Typ. switching energy versus collector current

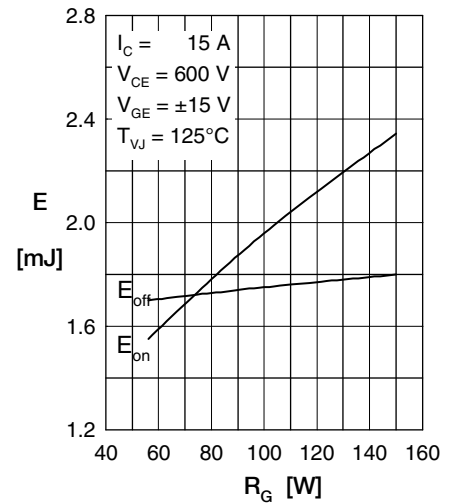


Fig. 6 Typ. switching energy versus gate resistance



Fig. 7 Typ. transient thermal impedance junction to case

Boost Diode BD

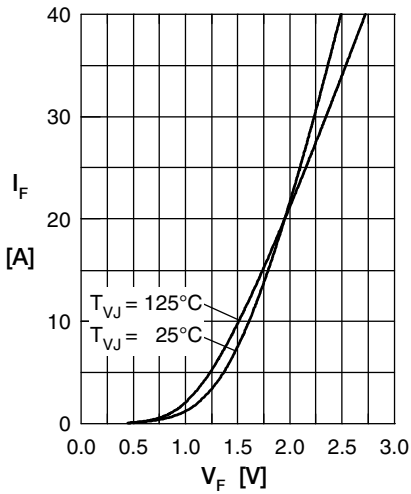


Fig. 1 Typ. Forward current versus V_F

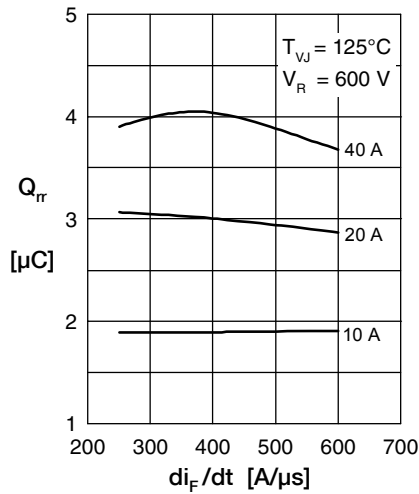


Fig. 2 Typ. reverse recov. charge Q_{rr} versus di_F/dt

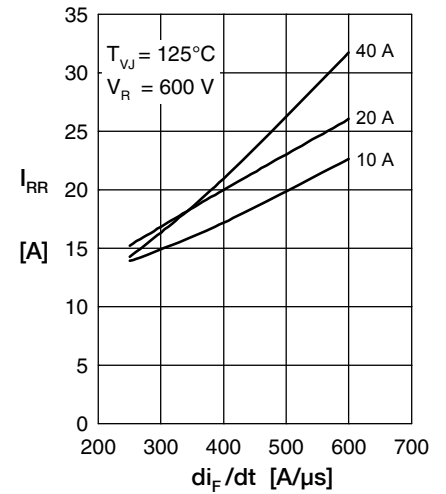


Fig. 3 Typ. peak reverse current I_{RRM} versus di_F/dt

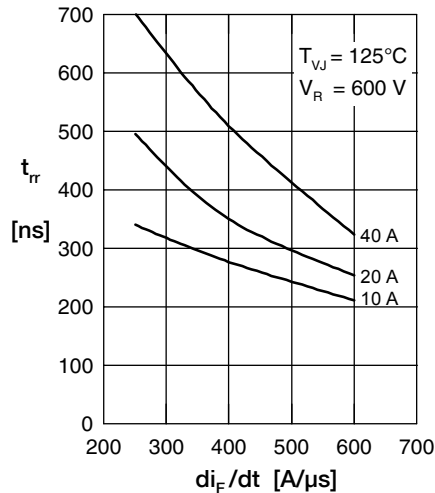


Fig. 4 Dynamic parameters Q_{rr} , I_{RRM} versus di/dt

Fig. 5 Typ. recovery time t_{rr} versus di/dt

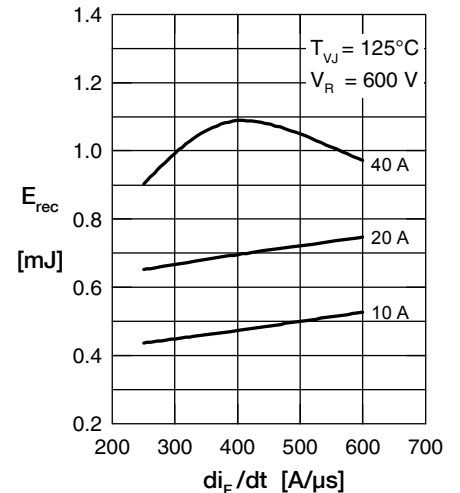


Fig. 6 Typ. recovery energy E_{rec} versus di/dt

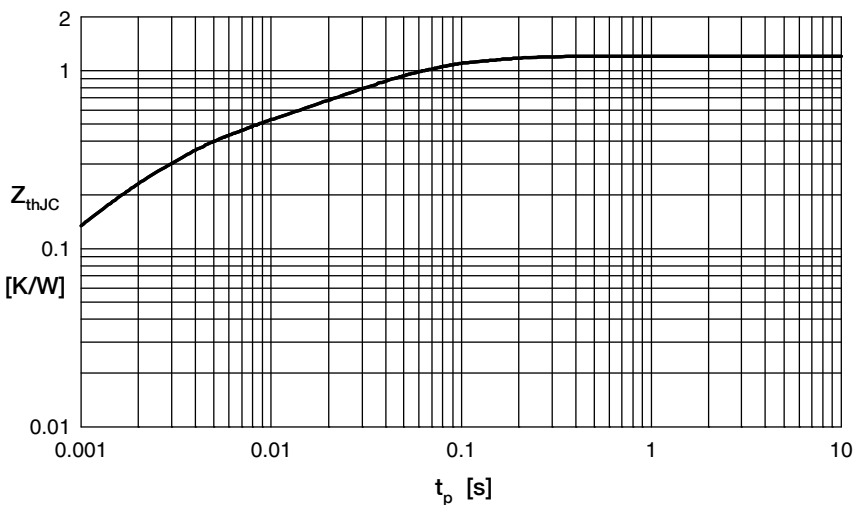


Fig. 7 Typ. transient thermal impedance junction to case



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- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
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- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
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