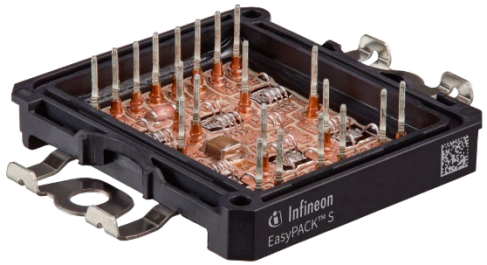
The new Easy S-series

Smart – Small – Sizeable



Low Power Marketing

Launch: June 2026

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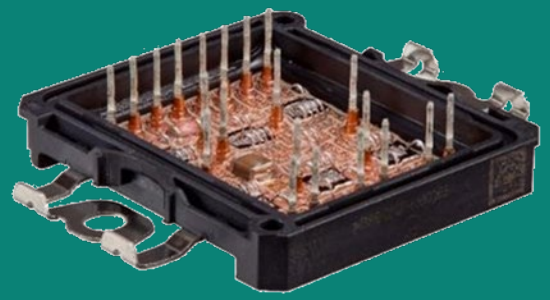
Infineon’s Easy S-series modules: Benchmark packages in the power semiconductor world, also for automotive industry

The **EasyPACK™ S family** is the best choice for customers who are looking for a **flexible and scalable** power module solution. We offer the broadest package and technology portfolio. The flexible pin grid system is a perfect fit for **customizing** layout and pinout.

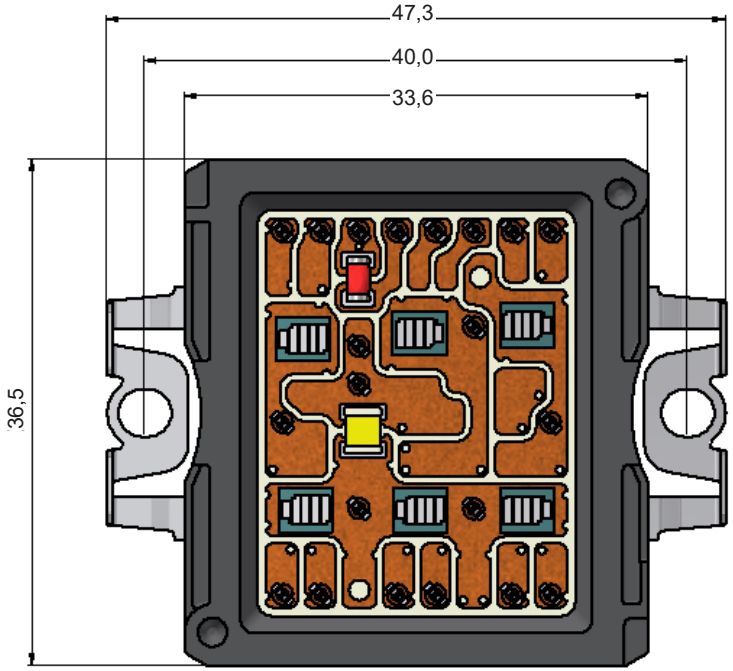
+75mio
DW in 2025

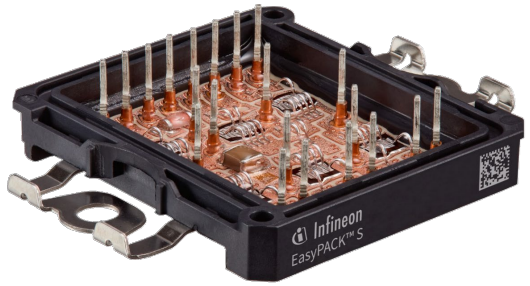


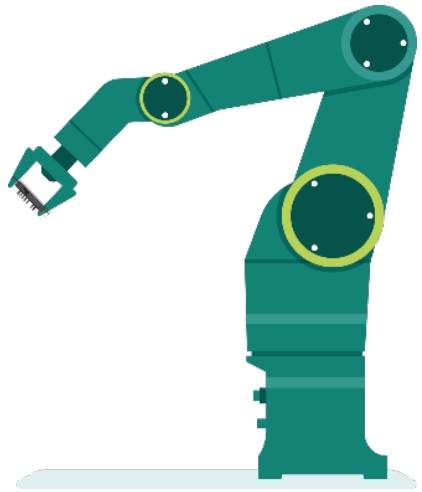
Advantages of Infineon´s Easy S-series modules

- **High-Volume Production:** The EasyPACK™ family extension is designed to support high-volume production with a high degree of automated handling for customer efficiency.
- **Competitive Pricing:** Ensures price competitiveness against various market solutions, including topside-cooled devices and molded packages.
- **Future-Ready Design:** The EasyPACK™ family extension is prepared for integration with new chip technologies and can meet demanding lifetime requirements.

EasyPACK™ S – mechanical concept design







Target Requirements	
Packaging base area	~36,5 x 33,6 mm (36,5 x 47,3 mm incl. clamps)
Packaging height	~5,6 mm
Creepage distance pin->heat sink	12,4 mm
CTI value	600
Interconnection	High current PressFit pins
Operating temperature	175 °C
Manufacturing support 1	Alignment holes for automated handling
Manufacturing support 2	Gripping areas on module frame
Qualification	AQG324
Sample availability	yes
Target SOP	Q2/2026

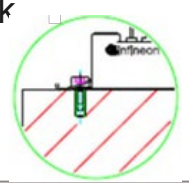
Automated Processing Made Easy: Features of EasyPACK™ S

1 Module handling

- Four gripping areas
- 50 N max force
- DMC code for traceability

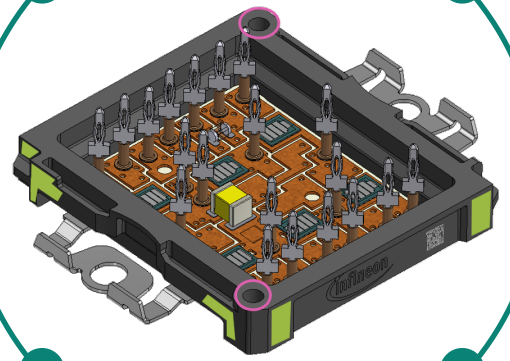
2 Metal clamps

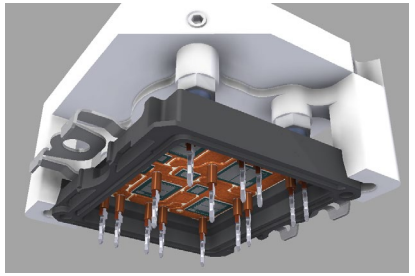
- Optimized for industrial automated screwing
- compliant creepage distances for self-tapping screws



3 Integrated isolation

- Supports automated heatsink assembly



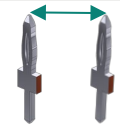


4 Press-fit pins

- Faster processing with higher reliability compared to soldering

5 Alignment holes

Precise alignment of the module to the PCB with 30 µm tolerance



6 Pin-to-pin tolerance

- Reduced pin-to-pin distance tolerance for accurate press-fit positioning (0.4 mm CZ)

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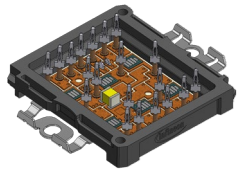
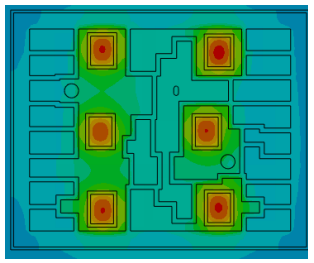
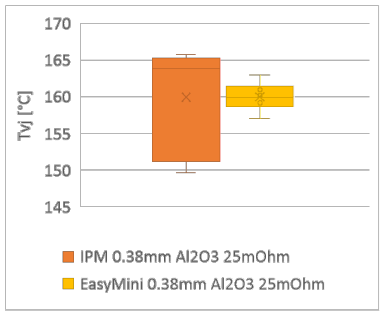
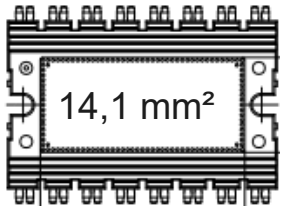
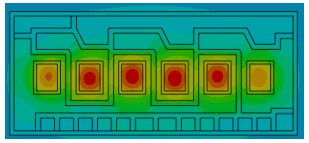
Easy S-series
Thermal comparison with discrete TSC and molded modules





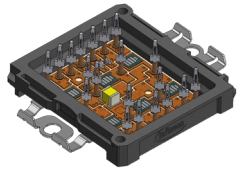


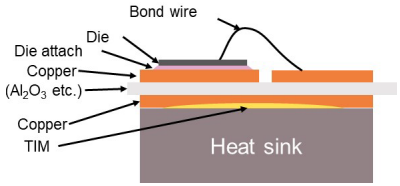


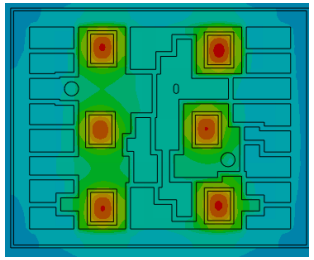


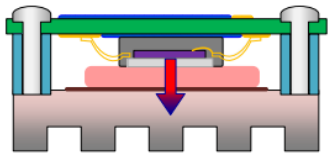
- EasyPACK™ S reaches the lower max. temperature under same conditions.
- EasyPACK™ S chip temperature is homogenous balanced.

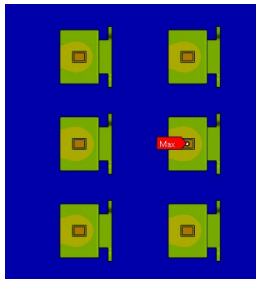
➡ efficient & easier customer design
➡ homogeneous lifetime consumption in EasyPACK™ S
➡ lower thermo-mechanical stress on substrate

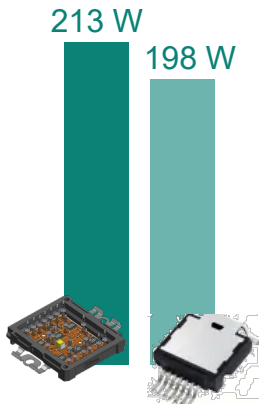








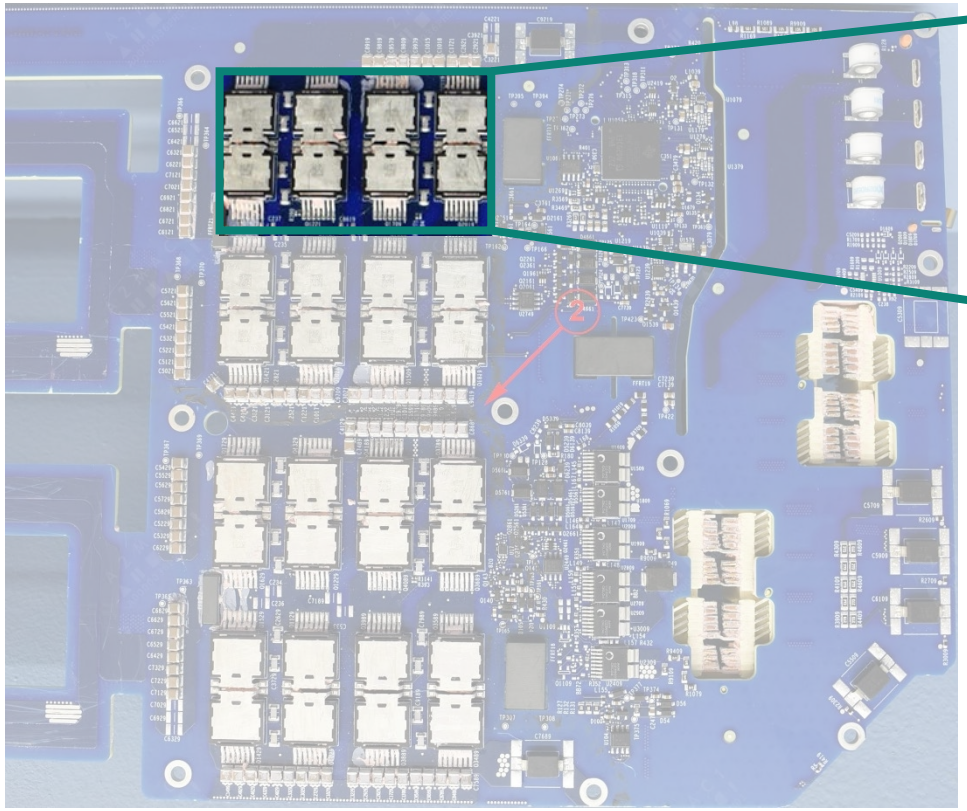




Manageable power losses at 150 °C T_{vj}
TSC (3,5 W/mK, 500 µm, 125 µm Kapton)
EasyPACK™ S) (3,5 W/mK TIM)

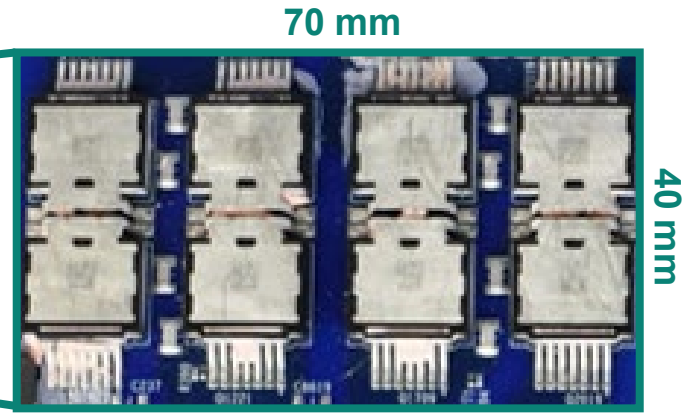
➡ higher output power with EasyPACK™ S for the same die size @ 30% less base area.
➡ smaller chip size for the same power rating with EasyPACK™ S

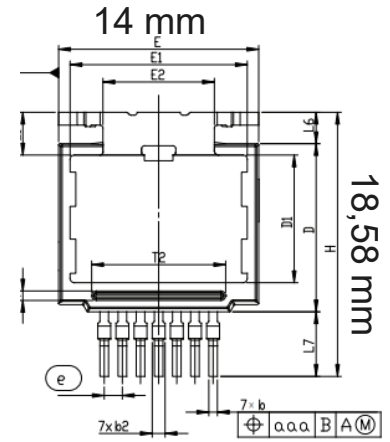
EasyPACK™ S can significantly reduce the PCB area

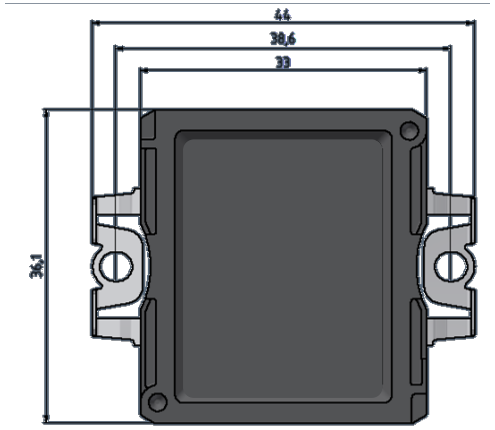


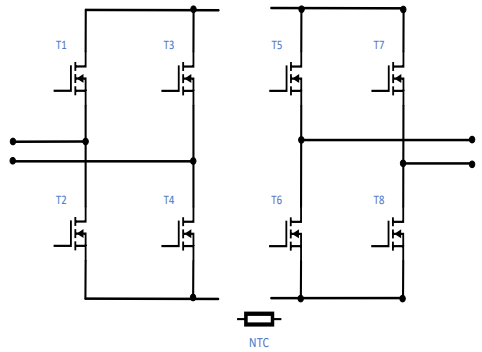
Cyber Truck OBC PCB

(Source: A2Mac1)







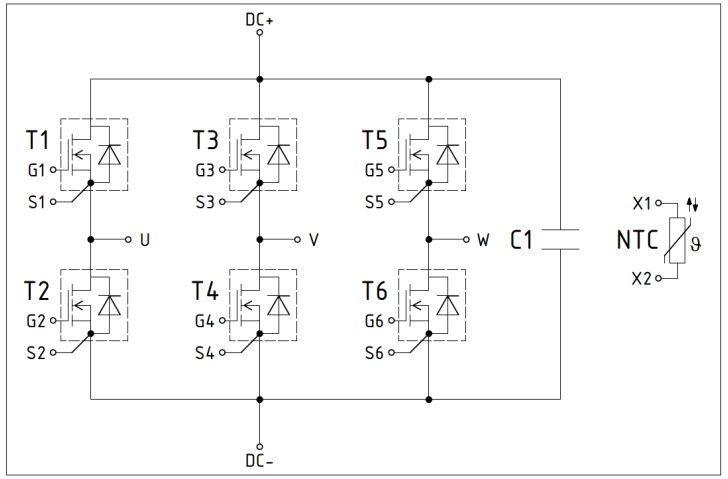


750 V SiC M2

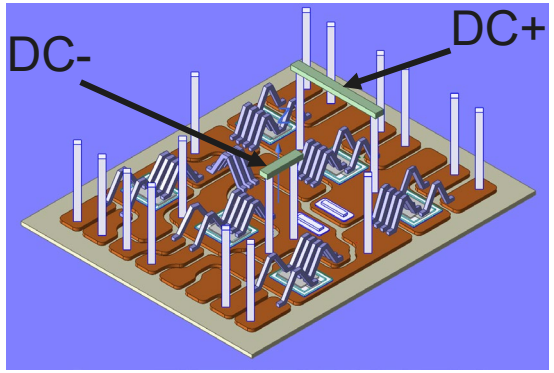
double H-bridge module

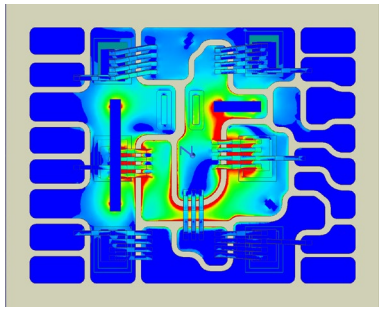
Key Data EasyPACK(TM) S-series lead Type: FS25MR12SM2_A

Circuit Diagram:



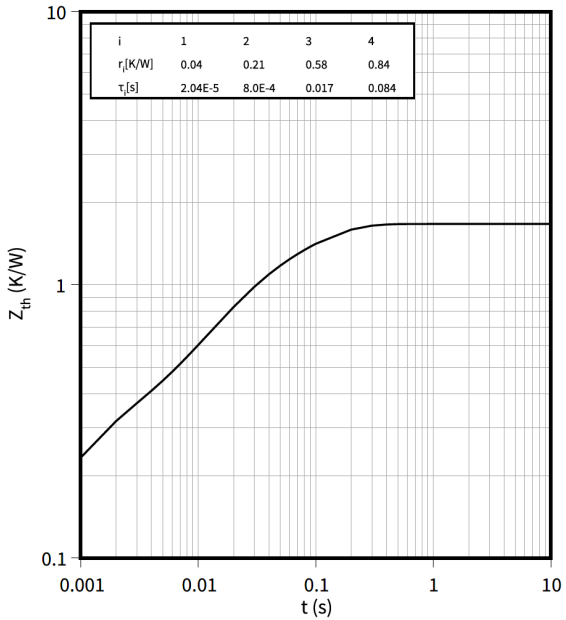
- Integrated decoupling capacitor
- Integrated NTC





- Ls : 10 nH*
- Low R_{gint} for high switching capability

*(w/o considering the snubber)



- Rth,jh: 1,7 K/W
- Al2O3 DCB*
- Losses up to 50 W/die
- Available also with high performance ceramic

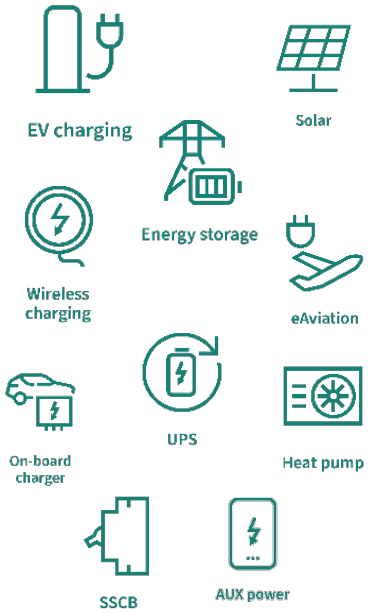
*Rth,jh with high performance ceramic comes down to 1 K/W

CoolSiC™ MOSFETs now even better: G2 comparison over G1

Improved chip performance	**~25% better $R_{DS(on)}$ x A** over the entire Tvj range
.XT assembly technology	**>22x** better power cycling capability
Best-in-class $R_{DS(on)}$ in Easy modules	Up to **35% higher output power** per module
$T_{vj,op}$ = 175°C	**$T_{vj,op}$** fully supported by EasyPACK™ S
Enlarged RBSOA	2,5 x the nominal current
Enlarged maximum gate-source voltage	-10 V to +25 V

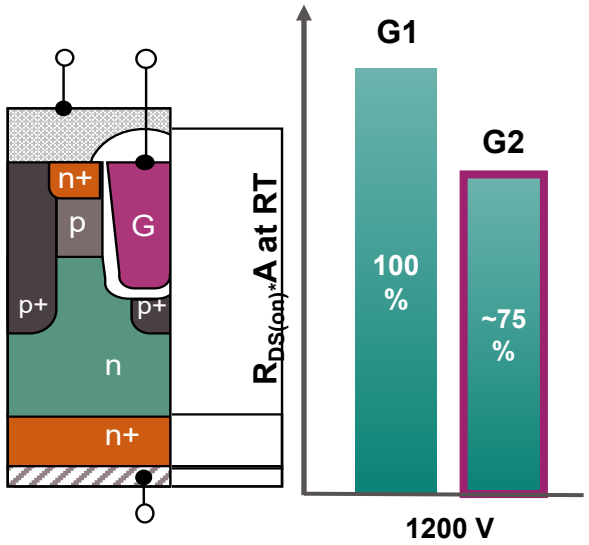
Different applications require different features – Infineon´s latest CoolSiC™ MOSFET & Easy modules will cover them all

Applications

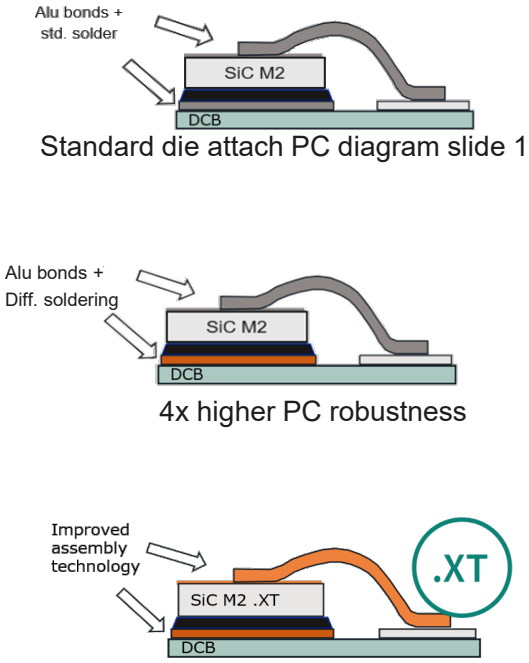


... and many more

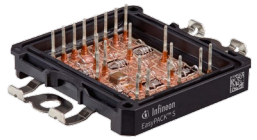
Chip technology



Assembly technology



Package



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Comparison of Basic Qualification Test Plan

Automotive grade **AQG324 compliant qualification**	**Test Description**	**Abbr.**	**Industrial grade**
1.000 h V_{CE} = 0,8 x V_{CES} (DC) T_{vj} = $T_{vj\ op\ max}$	High Temperature Reverse Bias	HTRB	1.000 h V_{CE} = 0,9 x V_{CES} (DC) T_{vj} = $T_{vj\ op\ max}$
1.000 h V_{GE} = ± 20 V *) (DC) T_a = $T_{vj\ op\ max}$	High Temperature Gate Bias	HTGB	1.000 h V_{GE} = ± 20 V *) (DC) T_a = $T_{vj\ op\ max}$
1.000 h T_a = 85 °C; RH = 85% V_{CE} = 80 V (DC)	High Humidity High Temperature Reverse Bias	H3TRB	1.000 h T_a = 85 °C; RH = 85% V_{CE} = 80 V (DC)
1.000 h Ta = 85 °C; RH = 85 % V_{CE} = 0,8 x V_{CES} (DC)	High Voltage High Humidity High Temperature Reverse Bias*	HV-H3TRB **)	1.000 h Ta = 85 °C; RH = 85 % V_{CE} = 0,8 x V_{CES} (DC)
N_{cyc} = $N_{cyc,\ target}$ ΔT_{vj} = @ two ΔT & two t_{on} $T_{vj\ max}$ = $T_{vj\ op\ max}$	Power Cycling	PC	N_{cyc} = $N_{cyc,\ target}$ ΔT_{vj} = @ one ΔT ***) $T_{vj\ max}$ = $T_{vj\ op\ max}$
1.000h T_a=$T_{stg,\ max}$	High Temperature Storage	HTS	1.000h T_a=$T_{stg,\ max}$
1.000h T_a=$T_{stg,\ min}$	Low Temperature Storage	LTS	-
Different profiles for vibrational tests → e.g. wide – band random; 8 h each direction (x, y, z) f = 5 / 10 / 55 / 180 / 300 / 360 / 1000 / 2000 [Hz] PSD = 0,884 / 20 / 6,5 / 0,25 / 0,25 / 0,14 / 0,14 / 0,14 [g²/Hz] a = 30,8 m/s² (r.m.s.)	Vibration	VIB	Sine Sweep 5 h each direction (x, y, z) f = 5…200 Hz f1 = 5…13 Hz: A = 7,5 mm (const.) f2 = 13…200 Hz: a = 50 m/s² v = 1 Octave/min.
60 shocks; 10 in each direction (±x, ±y, ±z) a = 500 m/s² (peak) t = 6 ms	Vibration (Shock)	MS	-
1.000 Cycles, mounted Ta = - 40 °C to + 125 °C	Thermal Shock Test (two chamber)	TST	50 Cycles, unmounted T_a = -40 °C to + 125 °C (or 150°C)

*) Typical value. May differ for e.g. SiC technology
**) Only if applicable
**) For a released power cycling curve, PC at one ΔT is performed, as a confirmation of the PC curve of the respective chip technology

Reliability Qualification acc. to the Automotive Qualification Guideline (AQG 324)

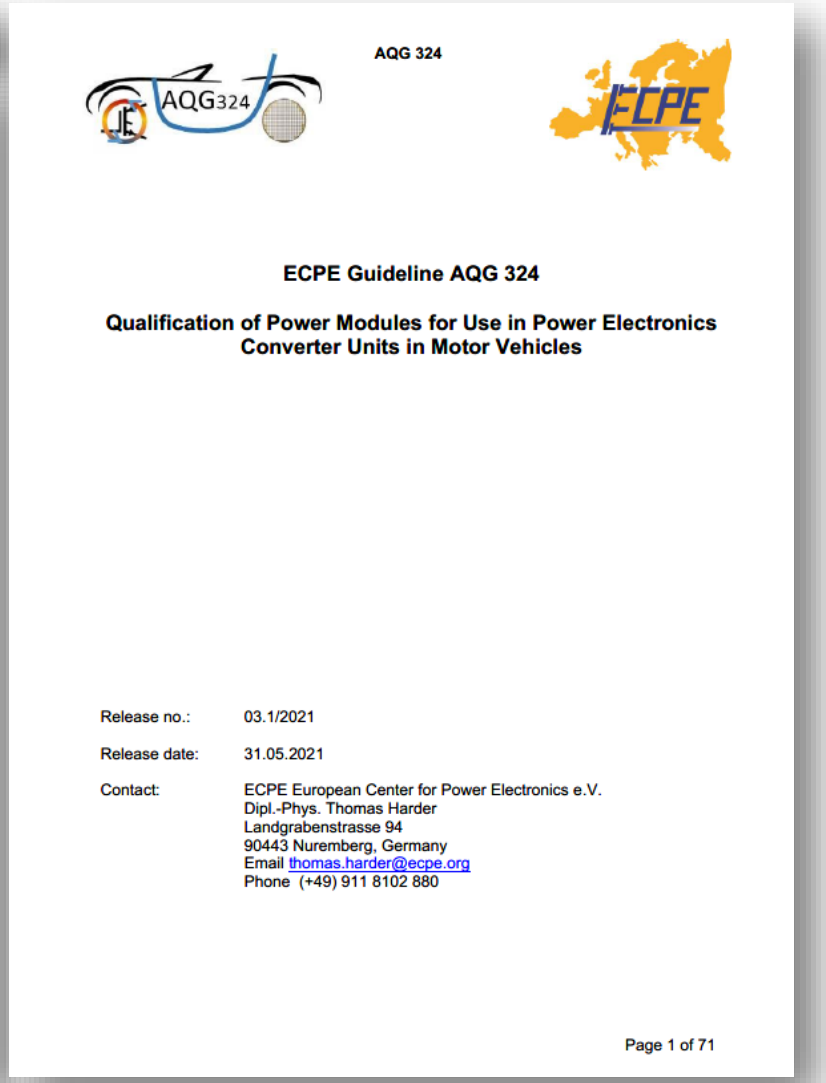
Main deltas to standard industrial qualification test plan

- **No differences**: Chip storage tests (HTGB; H3TRB; HV-H3TRB)

  Only difference:
  - HTRB @ V_{ce} = 0,8 x $V_{ces, max}$
  - Industrial grade typically V_{ce} = **0,9** x $V_{ces, max}$

- Additional tests:
  - LTS (low T - storage)
  - MS (mechanical shock)

- Expanded Tests:
  - **1000** cycles TST @ T_{stg} (industrial grade 50 cycles)
  - PC: 2 different ΔT and 2 different t_{on}
  - Different profiles for vibrational testing



AQG 324

ECPE Guideline AQG 324

Qualification of Power Modules for Use in Power Electronics Converter Units in Motor Vehicles

Release no.: 03.1/2021

Release date: 31.05.2021

Contact: ECPE European Center for Power Electronics e.V.
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Phone (+49) 911 8102 880

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Standard documentation

Retention/Submission Requirements Table 4.2

(Normative)

*[NOTE: Table 4.2 lists submission and retention requirements. Mandatory and applicable requirements for a **PPAP** record are defined in the **PPAP** manual and by the customer.]*

		Submission Level				
Requirement		*Level 1*	*Level 2*	*Level 3*	*Level 4*	*Level 5*
1.	Design Record	R	S	S	*	R
	- for proprietary components/details	R	R	R	*	R
	- for all other components/details	R	S	S	*	R
2.	Engineering Change Documents, if any	R	S	S	*	R
3.	Customer Engineering approval, if required	R	R	S	*	R
4.	Design FMEA	R	R	S	*	R
5.	Process Flow Diagrams	R	R	S	*	R
6.	Process FMEA	R	R	S	*	R
7.	Control Plan	R	R	S	*	R
8.	Measurement System Analysis Studies	R	R	S	*	R
9.	Dimensional Results	R	S	S	*	R
10.	Material, Performance Test Results	R	S	S	*	R
11.	Initial Process Studies	R	R	S	*	R
12.	Qualified Laboratory Documentation	R	S	S	*	R
13.	Appearance Approval Report (AAR), if applicable	S	S	S	*	R
14.	Sample Product	R	S	S	*	R
15.	Master Sample	R	R	R	*	R
16.	Checking Aids	R	R	R	*	R
17.	Records of Compliance With Customer-Specific Requirements	R	R	S	*	R
18.	Part Submission Warrant (PSW)	S	S	S	S	R
	Bulk Material Checklist (see 4.1 above)	S	S	S	S	R

S = The organization shall submit to the customer and retain a copy of records or documentation items at appropriate locations.

R = The organization shall retain at appropriate locations and make available to the customer upon request.

* = The organization shall retain at appropriate locations and submit to the customer upon request.

PPAP level 3 is a standard documentation provided for products with Quality Requirement Category „automotive“

No PPAP is provided for industrial products.

For industrial products, standard documentation can be found on our web pages:

- Data Sheet
- Product Qualification Report
- MCDS

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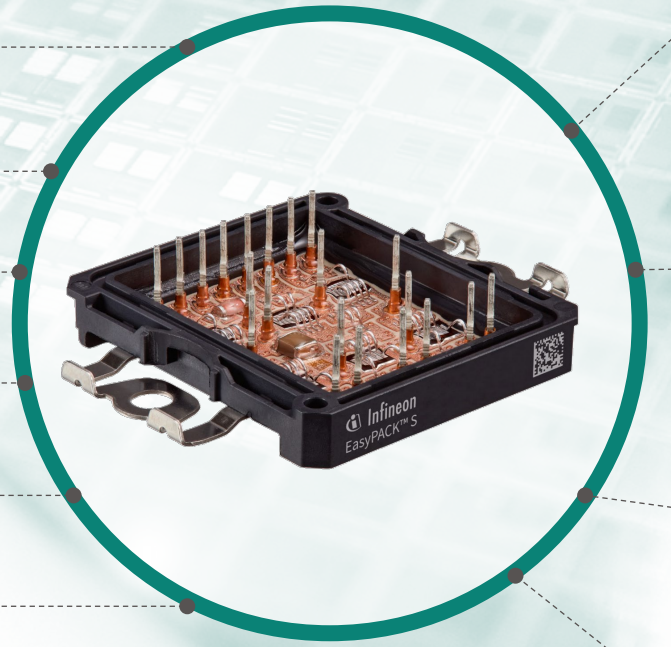
Easy module solution is based on flexibility and customization, supports special application requirements and customer demands

Customization through…

- ...circuit topology
- ... adding components
- ..Exchange of components
- ...Thermal performance
- ...Optimized layout
- ... Alternative sourcing



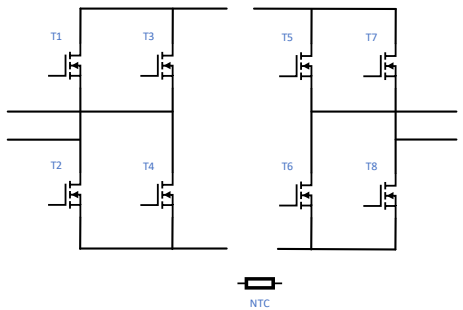
Flexibility with our variety of chipsets

TRENCHSTOP™ IGBT7 1200 V ☑	Trench/Fieldstop IGBT4 1200 V ☑	TRENCHSTOP™ 5 H5, 650 V ☑
EC7 Diode 1200 V ☑	Rapid1 Diode 650 V ☑	CoolSiC™ Schottky Diodes 650 V / 1200 V ☑
CoolSiC™ MOSFET M1H 1200 V ☑	CoolSiC™ MOSFET **M2** 1200 V ☑	CoolSiC™ MOSFET **M2** 750 V ☑
CoolMOS™ CFD7A 650 V ☑		

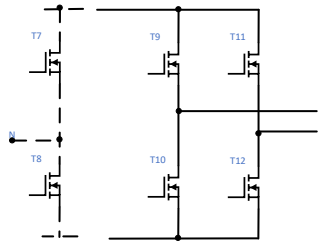
☑ available ⧖ upcoming

Easy modules enable customers differentiation

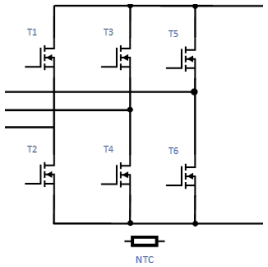
Planned Easy S-series portfolio



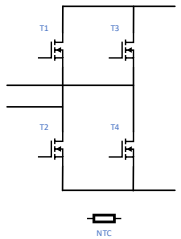
	EasyPack ™ S	Spec	Technology
Module 1	T1-T8	750 V ~40 mΩ	SiC MOSFET
Module 2	T1-T8	750 V ~22 mΩ	SiC MOSFET



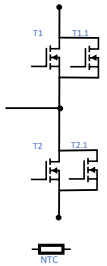
	EasyPack ™ S	Spec	Technology
Module 1	T7-T8 T9-T12	1200 V 15-17mΩ 1200 V ~50 mΩ	SiC MOSFET SiC MOSFET
Module 2	T7-T8 T9-T12	750 V 22 mΩ 750 V ~40 mΩ	SiC MOSFET SiC MOSFET



	EasyPack ™ S	Spec	Technology
Module 1	T1-T6	1200 V ~25 mΩ	SiC MOSFET
Module 2	T1-T6	1200 V ~40 mΩ	SiC MOSFET
Module 3	T1-T6	1200 V ~60 mΩ	SiC MOSFET



	EasyPack ™ S	Spec	Technology
Module 1	T1-T4	750 V 40 mΩ	SiC MOSFET
Module 2	T1-T4	750 V 22 mΩ	SiC MOSFET
Module 3	T1-T4	1200 V 25 mΩ	SiC MOSFET
Module 4	T1-T4	1200 V ~40 mΩ	SiC MOSFET



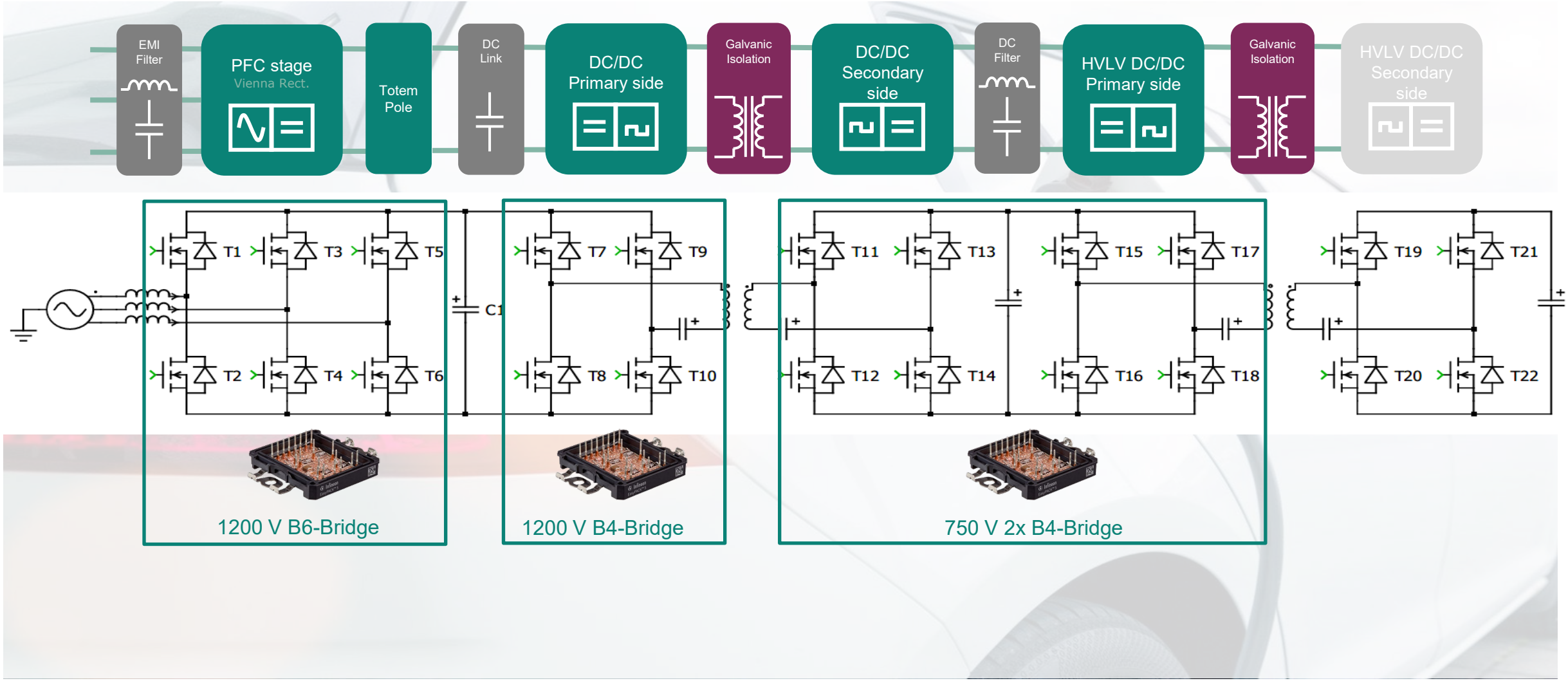
	EasyPack ™ S	Spec	Technology
Module 1	T1- T2.1	1200 V 13 mΩ	SiC MOSFET
Module 2	T1- T2.1	750 V ~11 mΩ	SiC MOSFET
Module 3	T1- T2.1	750 V ~4 mΩ	SiC MOSFET

ATV qualified chip set

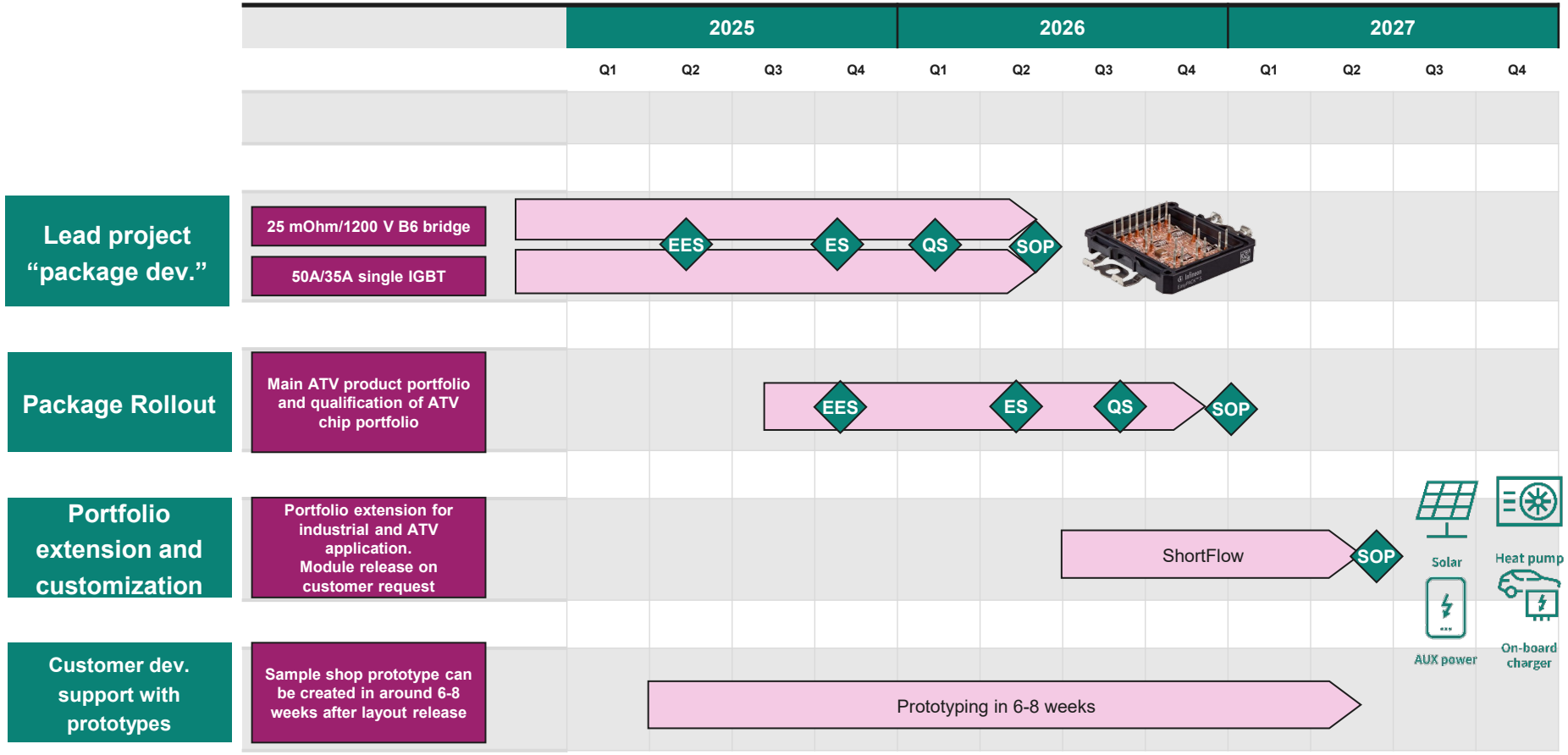
Voltage	R_{dson} / current rating	Technology
650 V	35, 75, 99 mOhm	CFD7A; CoolMOS
650 V	50 A	IGBT 5 H5
650 V	40 A	Rapid 1 Diode
650 V	16 A	SiC G5 Diode
750 V	8, 25, 46	M2 SiC
1200 V	33, 55, 73 mOhm	M1H SiC
1200 V	15*, 25, 40*, 60*,	M2 SiC
1200 V	20 A	SiC G5 Diode
1200 V	100 A, 50 A	IGBT 7
1200 V	100 A, 50 A, 11A	EC7 Diode

* planned

Easy S-series OBC proposal



Timeline of Easy S-series portfolio development



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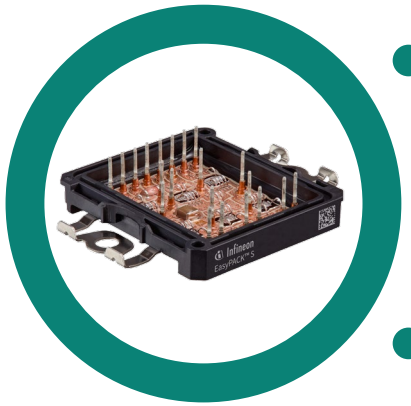
EasyPACK™ S
Smart – Small – Sizeable



- … is ready for high volume production capability on customer side including screwing process and handling process
- … stands for optimized cost / performance on system level
- … offers highest flexibility in terms of chip technology selection and cost/performance optimization.
- … comes with ultra low stray inductance enabling high switching frequencies, e.g., for GaN.
- … supports continuous high temperature operation capability 175 °C


Infineon