



Data sheet Update for D2PAK 1200V Gen1p SiC-Product AIMBG120Rx

Customer Information Package

PCN 2024-097-B



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Motivation of the change

- Adjusting certain table values and graphs to represent the parameter variation more precisely
- Adding new graphs
- Adjusting some parameters based on additional measurements
- Improving the visibility of some graphs
- Fixing typos and editorial changes

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Change overview: Rdson related table values and graphs

Description	Old	New
Data sheet update: output characteristic graphs ($I_{DS} = f(V_{DS})$, $I_{SD} = f(V_{DS})$)	Consistent with average measured Rdson curves. High current range, low visibility in the operating area.	Consistent with Rdson sales code. Current range is now within datasheet max limits with better visibility in the operating area.
Data sheet update: transfer characteristic graph ($I_{DS}=f(V_{GS})$)	High current range, low visibility in the operating area. Based on output curves not consistent with Rdson sales code.	Consistent with output curves and table values for the Rdson sales code. Current range within datasheet max limits with better visibility in the operating area.
Data sheet update: Rdson@Vgs=18V	Based on output curves not consistent with Rdson sales code.	Consistent with output curves and sales code Rdson for all Rdson types
Data sheet update: Transconductance value (gfs)	Not fully consistent with output curves of the sales code Rdson for some Rdson types	New values consistent with transfer curve, matching sales code Rdson and output curves for all Rdson types

Change overview: switching parameters

Description	Old	New
Data sheet update: switching energy and times as well as forward recovery parameters. E_{on} , E_{off} , E_{tot} , t_{don} , t_r , t_{doff} , t_f , Q_{fr} , I_{frm}	Values of switching energies and times were impacted by parasitics of the measurement setup resulting in inconsistencies due to oscillations.	More precise values obtained in new characterization with the improved setup.
Data sheet update: Switching graphs $E=f(T_{vj})$, $E=f(RG, ext)$, $t=f(RG, ext)$, $I_{frm}=f(diSD/dt)$	Measured values of switching energies and times used as a basis for respective graphs, were impacted by parasitics of the measurement setup resulting in inconsistencies due to oscillations.	More precise values obtained for these graphs in the new characterization with the improved setup.

Change overview: new graphs

Description	Old	New
Data sheet update: added graph „Typical Coss stored energy vs Drain voltage“ ($E_{oss}=f(V_{ds})$)	n.a.	Added $E_{oss}=f(V_{ds})$ graph
Data sheet update: added graph „Typical switching energy as a function of drain current“ ($E=f(I_d)$)	n.a.	Added $E=f(I_d)$ graph

Change overview: other

Change	Old	New	Comment
IDSS@175C values updated (Table 4, p.4)	See details in the Datasheet	See details in the Datasheet	Due to the impact of the mold compound some lots show higher Idss values at 175C
Vgsth@25C, Vgsth@175C, ID current for Vgsth	See details in the Datasheet	See details in the Datasheet	New values based on additional statistical data, ID current corrected
Sales type- specific changes	See details in the Datasheet	See details in the Datasheet	Details of changes specific to a certain sales type can be found in the revision history (p.15 of the Datasheet)
Creepage statement in “Features” section on page 1	“Mininal creepage distance 5.85mm (material group II) to fit 800V applications without coating”	“Creepage distance of 5.8mm (material group II) to fit 800V applications”	New calculation with worst case tolerances show slightly lower value. Coating decision depends also on PCB parameters and is up to the customer.
Package name on p.1	PG-TO263-7-HV-ND5.8	PG-TO263-7-U01	Using the “umbrella” package naming

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Details of datasheet changes: output and transfer curves

Change	Old	New	Comment
Data sheet update: output characteristic graphs ($I_{DS} = f(V_{DS})$, $I_{SD} = f(V_{DS})$)	Typical output characteristic, V_{GS} as parameter $I_{DS} = f(V_{DS})$ $T_{vj} = 25\text{ }^{\circ}\text{C}$	Typical output characteristic, V_{GS} as parameter $I_{DS} = f(V_{DS})$ $T_{vj} = 25\text{ }^{\circ}\text{C}$, $t_p = 20\text{ }\mu\text{s}$	Consistent with R_{dson} sales code. Current range is now within datasheet max limits with better visibility in the operating area. No Product change.
Data sheet update: transfer characteristic graph ($I_{DS}=f(V_{GS})$)	Typical transfer characteristic $I_{DS} = f(V_{GS})$ $V_{DS} = 20\text{ V}$	Typical transfer characteristic $I_{DS} = f(V_{GS})$ $V_{DS} = 20\text{ V}$, $t_p = 20\text{ }\mu\text{s}$	New curve is consistent with output curves and table values for the R_{dson} sales code. Current range within datasheet max limits with better visibility in the operating area. No Product change.

Details of datasheet changes: switching graphs

Change	Old	New	Comment
Data sheet update: Switching energies ($E=f(Tvj)$, $E=f(Rg,ext)$)	Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $E = f(T_{vj})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $R_{G,ext} = 2\text{ }\Omega$, $V_{DD} = 800\text{ V}$ Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $E = f(R_{G,ext})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $T_{vj} = 175\text{ }^\circ\text{C}$, $V_{DD} = 800\text{ V}$	Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $E = f(T_{vj})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $R_{G,ext} = 2\text{ }\Omega$, $V_{DD} = 800\text{ V}$ Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $E = f(R_{G,ext})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $T_{vj} = 175\text{ }^\circ\text{C}$, $V_{DD} = 800\text{ V}$	More precise values obtained for these graphs in the new characterization with the improved setup. No Product change.
Data sheet update: Switching times ($t=f(RG,ext)$)	Typical switching times as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $t = f(R_{G,ext})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $T_{vj} = 175\text{ }^\circ\text{C}$, $V_{DD} = 800\text{ V}$	Typical switching times as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $t = f(R_{G,ext})$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $T_{vj} = 175\text{ }^\circ\text{C}$, $V_{DD} = 800\text{ V}$	More precise values obtained for these graphs in the new characterization with the improved setup. No Product change.
Data sheet update: Forward recovery peak current $I_{frm}=f(diSD/dt)$	Typical reverse recovery current as a function of reverse drain current slope, test circuit in Fig. F, 2nd device own body diode: $V_{GS}=0\text{ V}$ $I_{frm} = f(diSD/dt)$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $V_{DD} = 800\text{ V}$	Typical MOSFET peak forward recovery current as a function of reverse drain current slope $I_{frm} = f(-diSD/dt)$ $V_{GS} = 0/20\text{ V}$, $I_D = 10\text{ A}$, $V_{DD} = 800\text{ V}$	More precise values obtained for these graphs in the new characterization with the improved setup. No Product change.

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Conclusion

- No technical change to the product
- Table values and graphs adjusted to better represent device behavior
- New graphs added
- Changes to graphs for better visibility
- Editorial change for package name
- Creepage statement adjusted based on new calculations
- Detailed change overview can be found in the revision history of the Data sheet

