

# 30 A VRPower® Integrated Power Stage

(Datasheet in Brief)

### **DESCRIPTION**

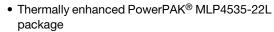
The SiC545 is an integrated power stage solution optimized for synchronous buck applications to offer high current, high efficiency, and high power density performance. Packaged in Vishay's proprietary 4.5 mm x 3.5 mm MLP package, SiC545 enables voltage regulator designs to deliver up to 30 A continuous current per phase.

The internal power MOSFETs utilize Vishay's state-of-the-art Gen IV TrenchFET® technology that delivers industry benchmark performance to significantly reduce switching and conduction losses.

The SiC545 incorporates an advanced MOSFET gate driver IC that features high current driving capability, adaptive dead-time control, an integrated bootstrap Schottky diode, and zero current detection to improve light load efficiency. The driver is also compatible with a wide range of PWM controllers, supports tri-state PWM, and 5 V PWM logic.

A user selectable diode emulation mode (ZCD\_EN#) is included to improve the light load performance. The device also supports PS4 mode to reduce power consumption when system operates in standby state.

#### **FEATURES**





- Vishay's Gen IV MOSFET technology and a low-side MOSFET with integrated Schottky diode
- Delivers up to 30 A continuous current
- High efficiency performance
- High frequency operation up to 2 MHz
- · Power on reset
- 5 V PWM logic with tri-state and hold-off
- Supports PS4 mode light load requirement for IMVP8 with low shutdown supply current (5 V, 3 μA)
- Under voltage lockout
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

### **APPLICATIONS**

- Multi-phase VRDs for computing, graphics card and memory
- Intel IMVP-8 VRPower delivery
- V<sub>CORE</sub>, V<sub>GRAPHICS</sub>, V<sub>SYSTEM</sub> AGENT Skylake, Kabylake platforms
- V<sub>CCGI</sub> for Apollo Lake platforms
- Up to 24 V rail input DC/DC VR modules

#### TYPICAL APPLICATION DIAGRAM

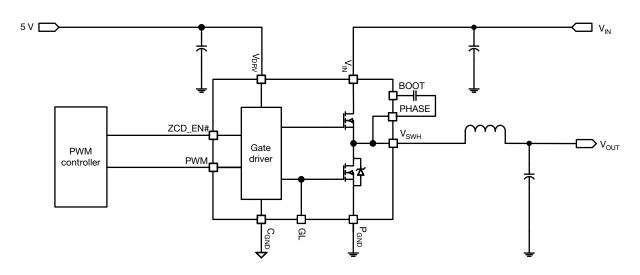


Fig. 1 - SiC545 Typical Application Diagram



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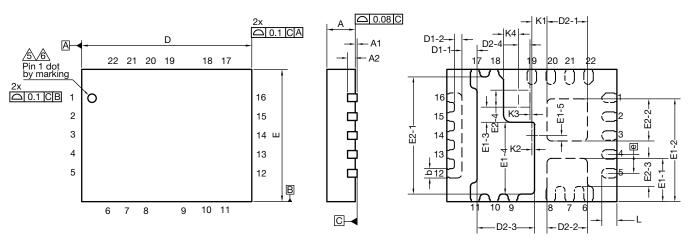
PRODUCT SUMMARY				
Part number	SiC545			
Description	30 A power stage, 4.5 V <sub>IN</sub> to 24 V <sub>IN</sub> , 5 V PWM with ZCD, PS4 mode			
Input voltage min. (V)	4.5			
Input voltage max. (V)	24			
Continuous current rating max. (A)	30			
Switch frequency max. (kHz)	2000			
Enable (yes / no)	No			
Monitoring features	-			
Protection	UVLO			
Light load mode	ZCD, PS4			
Pulse-width modulation (V)	5			
Package type	PowerPAK MLP4535-22L			
Package size (W, L, H) (mm)	4.5 x 3.5 x 0.75			
Status code	2			
Product type	VRPower (DrMOS)			
Applications	Computer, industrial, networking			

To request the full version of the datasheet, please contact: <a href="mailto:lCmarketing@vishay.com">lCmarketing@vishay.com</a>

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### MLP 4.5 x 3.5-22L BWL Case Outline



DIM.	MILLIMETERS				INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
A <sup>(8)</sup>	0.70	0.75	0.80	0.027	0.0029	0.031	
A1	0.00	-	0.05	0.000	-	0.002	
A2	0.20 ref.			0.008 ref.			
b <sup>(4)</sup>	0.20	0.25	0.30	0.0078	0.0098	0.0110	
D	4.50 BSC			0.177 BSC			
е	0.50 BSC			0.019 BSC			
E	3.50 BSC			0.137 BSC			
L	0.35	0.40	0.45	0.013	0.015	0.017	
N (3)	22			22			
Nd <sup>(3)</sup>	6			6			
Ne <sup>(3)</sup>	5			5			
D1-1	0.35	0.40	0.45	0.013	0.015	0.017	
D1-2	0.15	0.20	0.25	0.005	0.007	0.009	
D2-1	1.02	1.07	1.12	0.040	0.042	0.044	
D2-2	1.02	1.07	1.12	0.040	0.042	0.044	
D2-3	1.47	1.52	1.57	0.057	0.059	0.061	
D2-4	0.25	0.30	0.35	0.009	0.011	0.013	
E1-1	1.095	1.145	1.195	0.043	0.045	0.047	
E1-2	2.67	2.72	2.77	0.105	0.107	0.109	
E1-3	0.35	0.40	0.45	0.013	0.015	0.017	
E1-4	1.85	1.90	1.95	0.072	0.074	0.076	
E1-5	0.095	0.145	0.195	0.0037	0.0057	0.0076	
E2-1	3.05	3.10	3.15	0.120	0.122	0.124	
E2-2	1.065	1.115	1.165	0.0419	0.0438	0.0458	
E2-3	0.695	0.745	0.795	0.027	0.029	0.031	
E2-4	0.40	0.45	0.50	0.015	0.017	0.019	
K1	0.40 BSC			0.015 BSC			
K2	0.07 BSC			0.002 BSC			
K3	0.05 BSC			0.001 BSC			
K4	0.40 BSC			0.015 BSC			

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# **Package Information**



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#### **Notes**

- 1. Use millimeters as the primary measurement
- 2. Dimensioning and tolerances conform to ASME Y14.5M. 1994
- 3. N is the number of terminals,

Nd is the number of terminals in X-direction and

Ne is the number of terminals in Y-direction.

- 4. Dimension b applies to plated terminal and is measured between 0.20 mm and 0.25 mm from terminal tip
- 5. The pin #1 identifier must be existed on the top surface of the package by using indentation mark or other feature of package body
- 6. Exact shape and size of this feature is optional
- 7. Package warpage max. 0.08 mm
- 8. Applied only for terminals

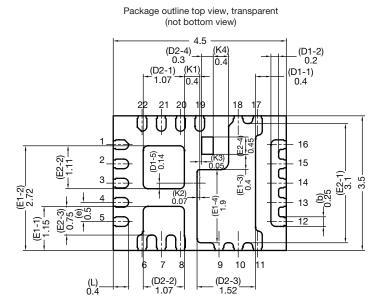
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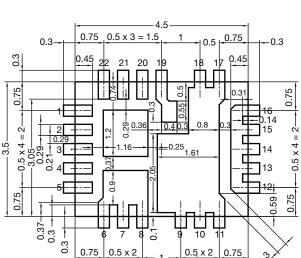
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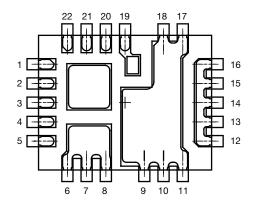
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## Recommended Land Pattern PowerPAK® MLP4535-22L





Land pattern



All dimensions in millimeters



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