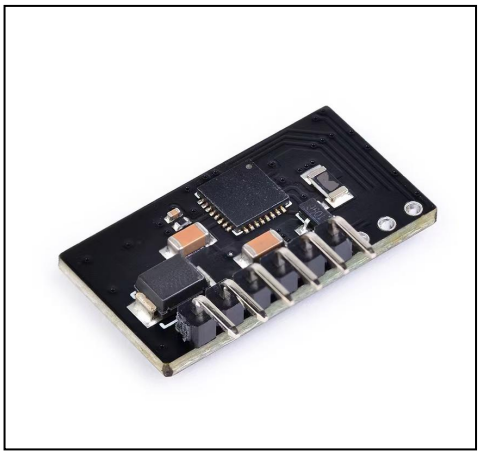
DESCRIPTION

PSE (Power-Sourcing-Equipment) Integrated Module



FEATURES

- Compliant with IEEE802.3at Type 1(af) & Type 2
- Small SIL package size - 26mm (L) x 14mm (H)
- Low cost
- Output power up to 39W on the "S" version and 60W on the "HP version
- Minimal (low cost) external components required
- Over-current and short circuit protection
- Industrial Temperature Range
- Sdapo "design-in" assistance
- RoHS Compliant

1 Description

The DP6100 is a single output Power Sourcing Equipment (PSE) module designed for use in IEEE802.3at Type 1 (af) and Type 2 Power over Ethernet (PoE) applications.

The DP6100 is capable of delivering up to 39W on the "S" version and up to 60W on the "HP" version. The DP6100 is aimed at applications requiring PSE functionality such as CCTV DVR, home networking and industrial ethernet.

DP6100 is a self-contained module, requiring just a few external components to provide a great deal of control and feedback over each Powered Device (PD) that is connected to the PSE.

1.1 DP6100 Product Selector

Part Number	Output Power (W)
DP6100-S	39
DP6100-HP	60

Table 1: Ordering Information

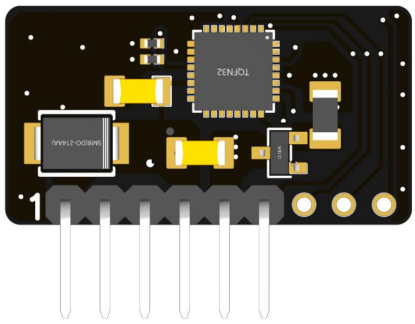


Figure 1: DP6100 Package Format

1.2 Pin Description

Pin #	Name	Description
1	VIN+	**Main Power Supply.** This pin connects to an isolated 44V to 57V supply; relative to the 0V.
2	0V	**GND.** This pin is the return path for the isolated V_{IN+} power supply.
3	STATUS	**Status Output.** This output shows the status of the DP6100.
4	PSE+	**Port Output.** This output pin monitors the line and supplies power to valid powered device.
5	PSE-	**Port Output Return.** This pin is the return path for PSE+.
6	NC	**No Connection.**

2 Functional Description

The Port output can be connected directly to the centre-tap of an IEEE802.3at compliant data transformer or to the spare pair connection for 10/100/1000/2500BASE-T applications, as shown in Figure 2.

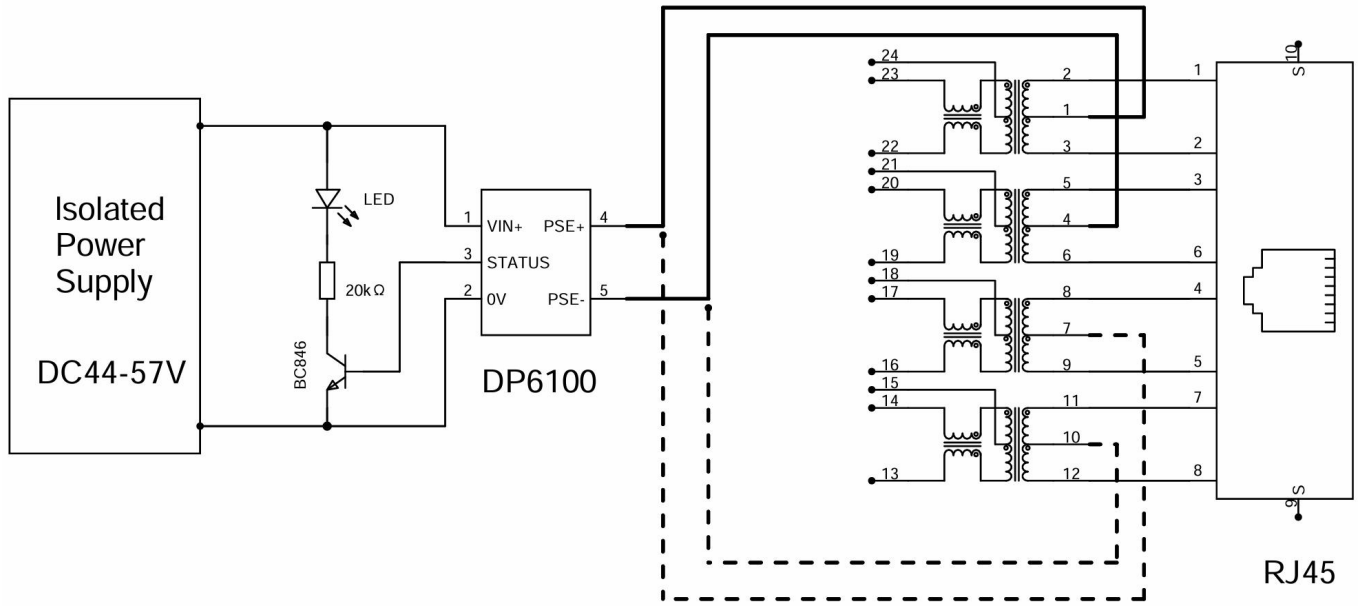


Figure 2: Typical Connection Diagram

2.1 Signature and Classification

The DP6100 will automatically perform the Signature and Classification, Figure 3 shows the timing sequence for a Type 1 Powered Device (PD) and Figure 4 shows the timing sequence for a Type 2 PD.

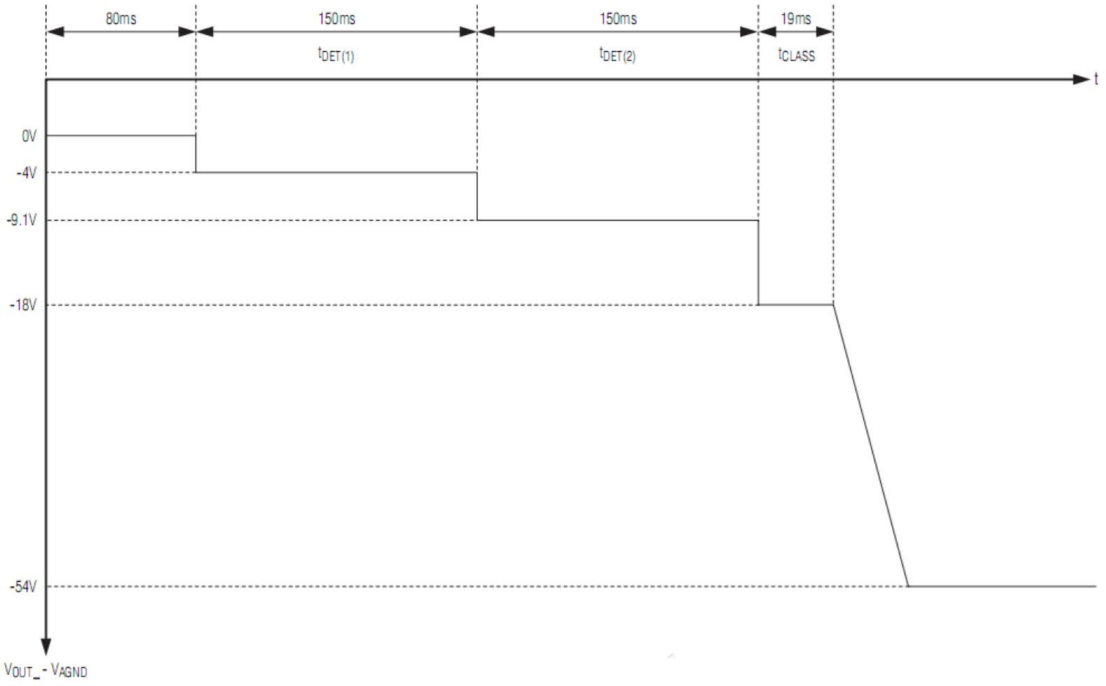


Figure 3: Signature, Class and Turn-On Timing - Type 1 PD

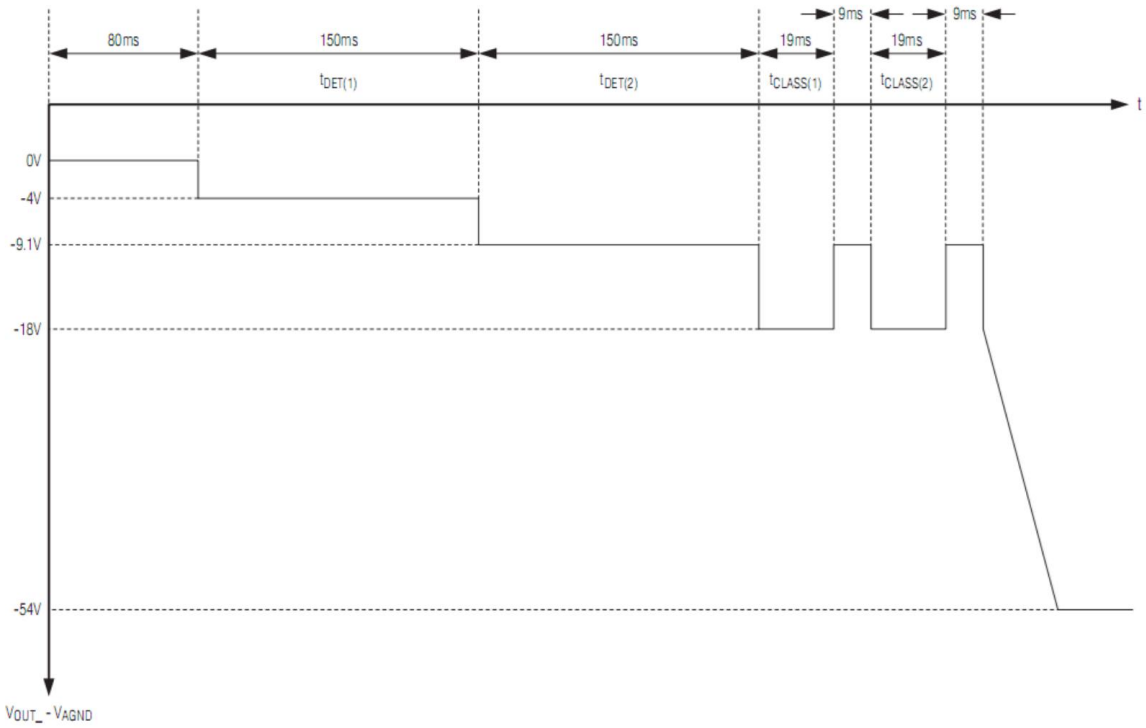


Figure 4: Signature, Class and Turn-On Timing - Type 2 PD

2.2 Classification

On completion of a valid signature, the DP6100 will then interrogate the PD to see if a classification signature is present. The classification signature is used to determine the amount of power the PD will draw and limits the output power accordingly (see Table 2). It is optional for the PD to present a classification signature and the DP6100 will default to Class 0 if the PD does not present one. If the DP6100-S sees a current over 48mA or the DP6100-HP sees a current over 65mA, it will detect this as 'Over Current' and will retry the signature after a 2 second delay.

Table 2 shows the measured current limits that the DP6100 uses to assign a classification value.

Measured Current	Classification
0mA to 6.5mA	Class 0
>6.5mA to 14.5mA	Class 1
>14.5mA to 23mA	Class 2
>23mA to 33mA	Class 3
>33mA to 48mA	Class 4
48mA to 65mA	Class 5 **(DP6100-HP only)**

Table 2: Classification Table

3 Electrical Characteristics

3.1 Absolute Maximum Ratings

	Parameter	Symbol	Min	Max	Units
1	DC Supply Voltage	V_{DD}	-0.3	60	V
2	DC Supply Voltage Surge for 1ms	V_{SURGE}	-0.6	80	V
3	Storage Temperature	T_S	-40	+100	˚C

3.2 Recommended Operating Conditions

	Parameter	Symbol	Min	Typ	Max	Units	Condition
1	V_{DD} Idle Supply Current	I_{DD}		6		mA	
2	Signature Detection Voltage	V_{SIGL}	3.8	4		V	
		V_{SIGH}		9.1	9.4	V	
3	Minimum Valid Signature	R_{SIGL}	15.2			KΩ	
4	Maximum Valid Signature	R_{SIGH}			32	KΩ	
5	Classification Voltage	V_{CLASS}	15.5		20	V	
6	Classification Mark Voltage	V_{MARK}	8		9.6	V	
7	Classification Threshold Current	I_{CLASS}	5.5	6.5	7.5	mA	Class 0 - 1
			13	14.5	16	mA	Class 1 - 2
			21	23	25	mA	Class 2 - 3
			31	33	35	mA	Class 3 - 4
			45	48	51	mA	Class 4 - 5
			51	55	65	mA	Class 5 - Over-current
8	Maintain Power Signature	V_{MPS}	5		10	mA	
9	Maximum Output Power @ 57V	P_{MAX}		21		W	Type-1
				39		W	Type-2-S

				60		W	Type-2 -HP
10	Current Limit Cut-Off Time	T_{LIM}	7	60		ms	Type-1
			7	60		ms	Type-2
11	STATUS Output	V_{OH}		0.6		V	
		V_{OL}		0		V	

4 Package

DP6100 (curved needle)

