DARE22G
1.8 V Power-On-Reset
Product Brief

Product Overview

DARE22G POR18 implements a 1.8 V supply power-on-reset circuit for radiation-hardened applications in the commercial GF 22 nm FDSOI CMOS technology.

This IP supports a range of DARE22G digital and mixed-signal IP blocks that require power-on-reset signals in the 1.8 V supply domain.

Features

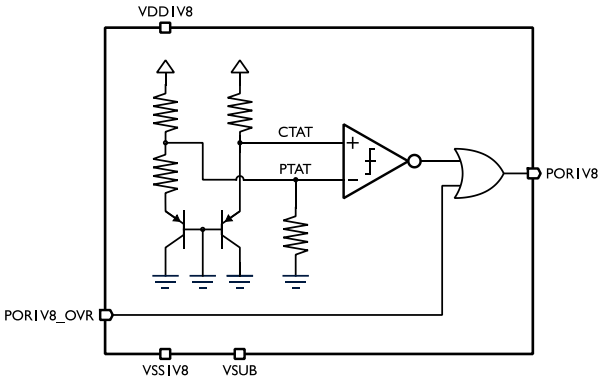
DARE22G POR18 main functionalities include:

- 1.8 V output reset signal
- External reset assertion override
- Positive-going trip point range of 1.36 - 1.42 V
- Negative-going trip point range of 1.36 - 1.40 V
- Hysteresis range of 0 - 40 mV
- Low operating current (≤ 8 µA)
- TID immunity over 100 krad (SiO_2)
- SET immunity over 60 MeV.cm^2/mg
- SEL immunity over 70 MeV.cm^2/mg

Block Diagram

The POR18 macro generates a reset signal when the 1.8 V power supply is first applied to the chip and keeps it asserted until the supply voltage reaches its nominal value. It employs a bandgap-based architecture, where PTAT and CTAT voltages from an open-loop bandgap reference are compared to produce the power-on reset signal.

The internally generated reset signal in the 1.8 V domain is output via the POR1V8 pin.



The power-on reset functionality can be combined with an external 1.8 V reset signal provided via the POR1V8_OVR pin. When asserted, this input signal will override the internally generated reset signal.

Pin Interface

Pin Name	Type	Description
VDD1V8	Power	Power supply
VSS1V8	Ground	Ground supply
VSUB	Ground	P-substrate bias voltage
POR1V8	Digital	Reset output
POR1V8_OVR	Digital	Reset override input

Physical Dimensions

DARE22G POR18 is implemented as a core macro.

IP Name	Width	Height
POR18	58 µm	263 µm

Contact

For further information, please contact us at dare@imec.be

Operating Conditions

Performance and reliability are not guaranteed outside these recommended operating boundaries.

Parameter	Name	Minimum	Typical	Maximum	Unit
Supply voltage	V_{DD1V8}	1.62	1.8	1.98	V
Operating temperature	T_J	-40	25	125	°C
TID immunity	TID	100			krad (SiO_2)
SET hardening	SET_{th}	60			MeV.cm^2/mg
SEL hardening	SEL_{th}	70			MeV.cm^2/mg