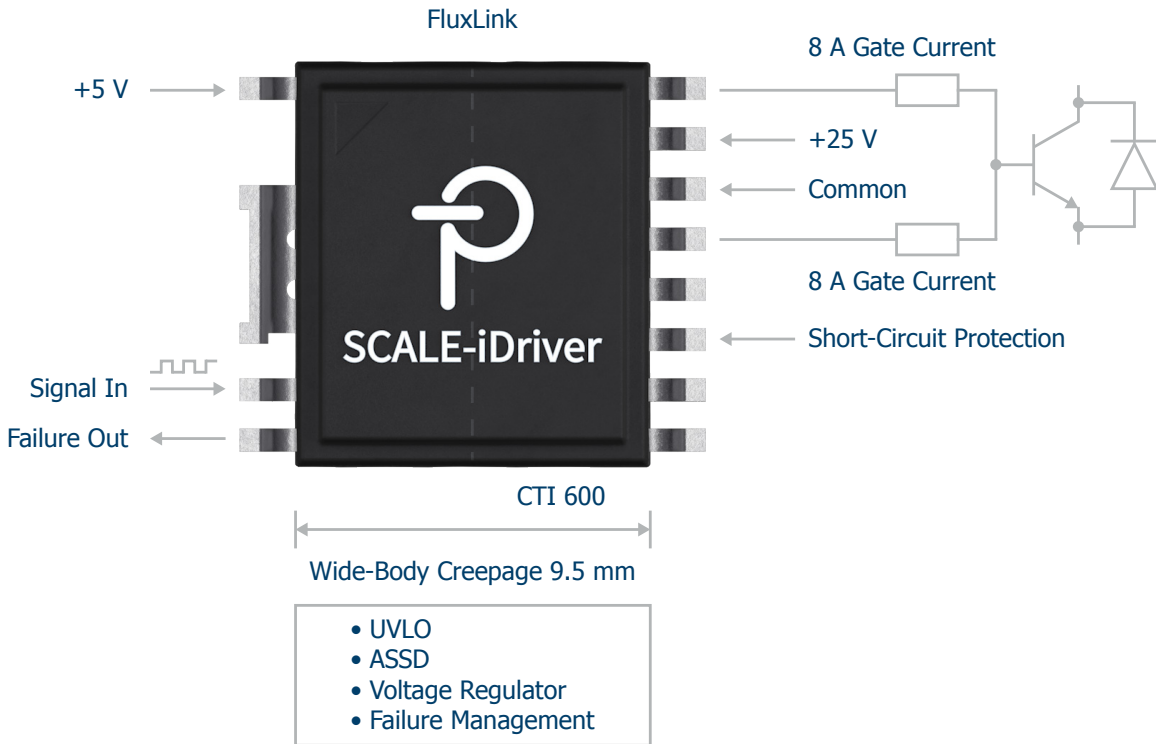


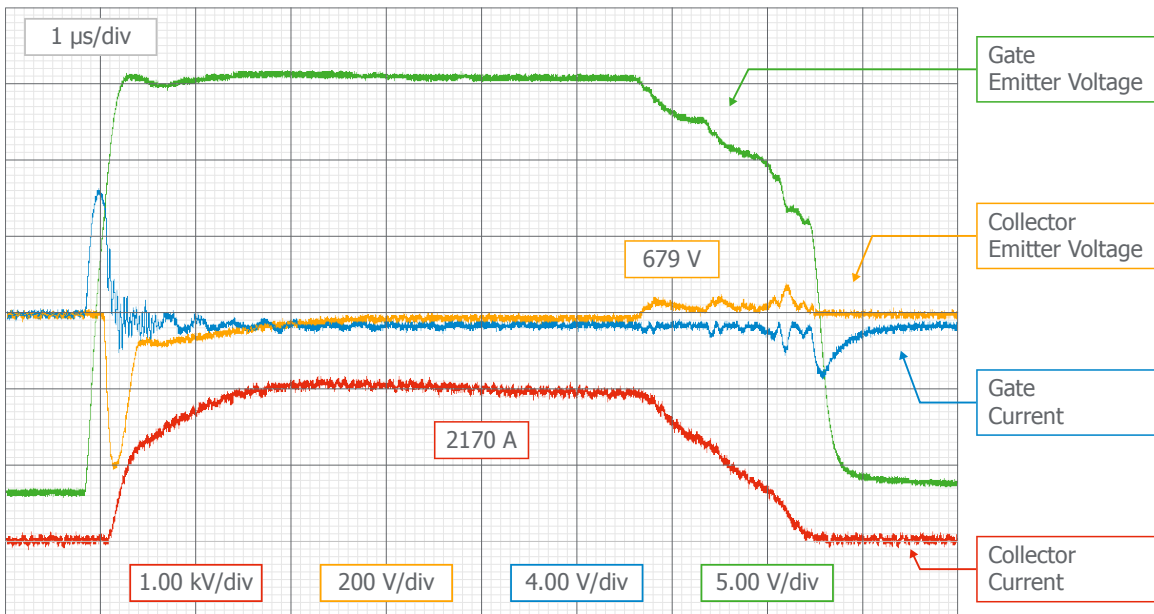
specific IGBT to be driven. Gate drive commands (PWM) from a microcontroller are applied to the input (IN) pin. Drive signals are transferred across the isolation barrier to the gate high (GH) and gate low (GL) pins. This split drive allows different gate turn-on / turn-off resistor values to be used to optimize control semiconductor switching characteristics, without the need of a diode.



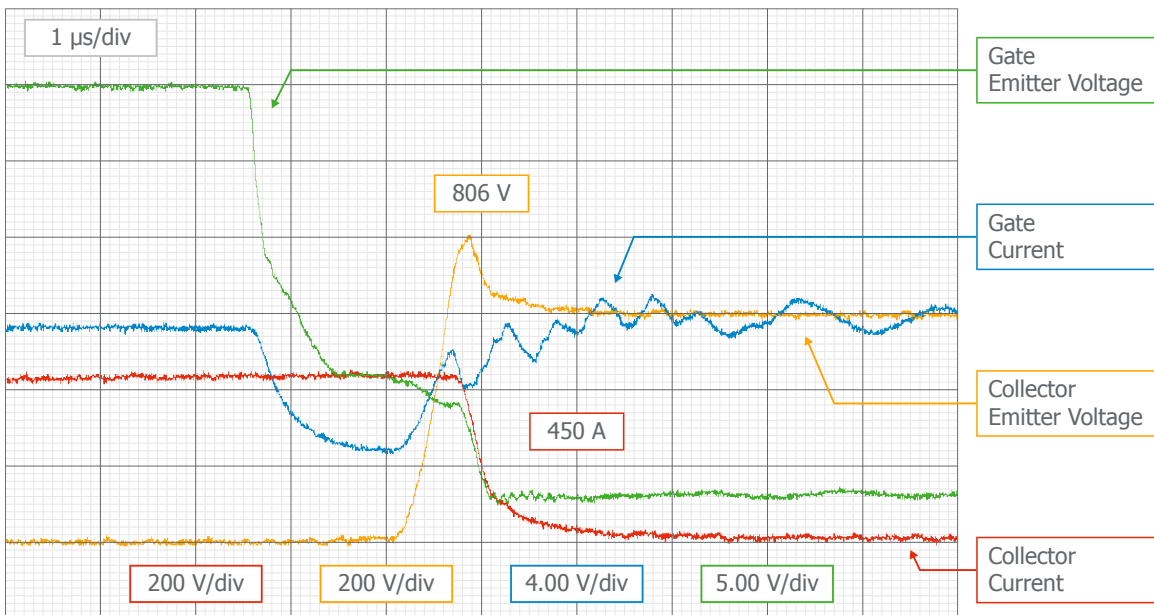
Primary and secondary fault detection and reporting enhances system reliability and safety. If the primary side V_{CC} or secondary side V_{ISO} or V_{EE} falls below the defined UVLO threshold, the output (SO) pin asserts a logic low signal to indicate a fault. This same feature enables safe power-on and power-off, even in the event of a slow supply voltage slew rate. The driver family also corrects any short drive pulses (normally caused by input noise incorrectly asserting the end of a pulse). If the input detects a pulse shorter than the $T_{GE(MIN)}$ threshold on the IN-pin, the driver will automatically extend the duration of the output drive signals on GH and GL to $T_{GE(MIN)}$.

The secondary side also has sophisticated fault monitoring which detects power supply under-voltage and semiconductor short-circuits. Upon detection of desaturation conditions, the controller activates the Advanced Soft Shut Down (ASSD) to protect the power switches, driving the SO pin to ground. A short-circuit on any of the power switching devices is detected using the semiconductor desaturation effect. If the voltage on V_{CE} exceeds a safety threshold (optimized for IGBT applications), the driver turns off the power switches with a controlled collector current-slope, which limits the V_{CE} overvoltage excursion, keeping it below the maximum permissible collector-emitter voltage.

ASSD @ $T_{vj} = 25\text{ }^{\circ}\text{C}$, ISC (2170 A), VDC = 600 V



Switching-off @ $T_{vj} = 25\text{ }^{\circ}\text{C}$, I_c (450 A), VDC = 600 V



SCALE-iDriver products have been developed for high reliability industrial applications where performance and reliability are essential. Power Integrations has also developed an advanced eSOP power package which provides 9.5 mm of creepage and clearance which combined with the reinforced isolation provided by the FluxLink technology makes for an unrivalled reliability. Together

The SCALE-iDriver family of gate drivers enables applications to meet IEC60664-1 specifications; SCALE-iDriver devices are UL and CSA recognized according to UL1577 – file number E358471 - and have been certified to the VDE0884-10 standard. Furthermore, the SCALE-iDriver family has also been designed to meet future standards such as VDE0884-17 and IEC60747-17. All the parts in the family operate up to 125 °C and are 100 % tested during production using both hi-pot and partial discharge techniques along with functionality testing designed to ensure safety.

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