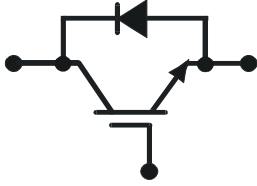


$V_{CE} = 3300 \text{ V}$
 $I_C = 1200 \text{ A}$



Doc. No. 5SYA1563-00 Apr.06

- Low-loss, rugged SPT chip-set
- Smooth switching SPT chip-set for good EMC
- High insulation package
- High power density
- AISiC base-plate for high power cycling capability
- AlN substrate for low thermal resistance



Maximum rated values ¹⁾

Parameter	Symbol	Conditions	min	max	Unit
Collector-emitter voltage	V_{CES}	$V_{GE} = 0 \text{ V}$		3300	V
DC collector current	I_C	$T_c = 80 \text{ °C}$		1200	A
Peak collector current	I_{CM}	$t_p = 1 \text{ ms}, T_c = 80 \text{ °C}$		2400	A
Gate-emitter voltage	V_{GES}		-20	20	V
Total power dissipation	P_{tot}	$T_c = 25 \text{ °C}, \text{ per switch (IGBT)}$		117	W

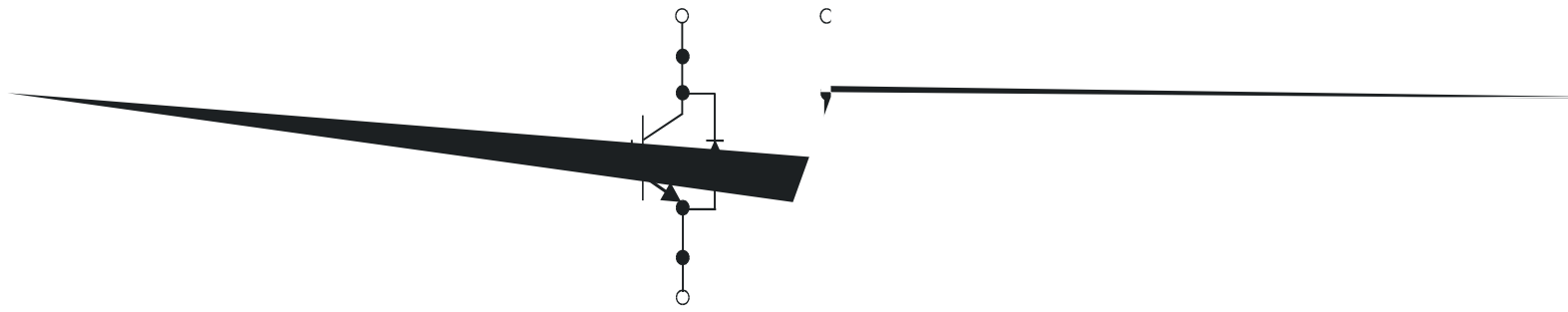
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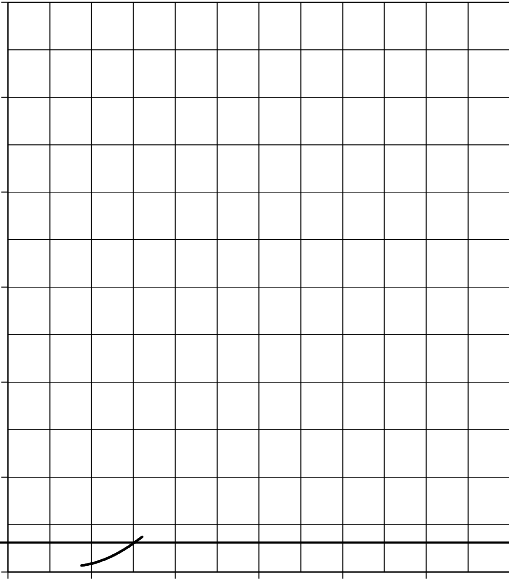


Diode characteristic values ⁵⁾

Parameter	Symbol	Conditions	min	typ	max	Unit
Forward voltage ⁶⁾	V_F	$I_F = 1200 \text{ A}$	$T_{vj} = 25 \text{ °C}$		2.3	V
			$T_{vj} = 125 \text{ °C}$	2.0	2.35	
Reverse recovery current	I_{rr}		$T_{vj} = 25 \text{ °C}$		1090	A
			$T_{vj} = 125 \text{ °C}$		1420	
Recovered charge	Q_{rr}		$T_{vj} = 25 \text{ °C}$		710	μC
			$T_{vj} = 125 \text{ °C}$		1300	
Reverse			$T_{vj} = 25 \text{ °C}$		560	

Electrical configuration





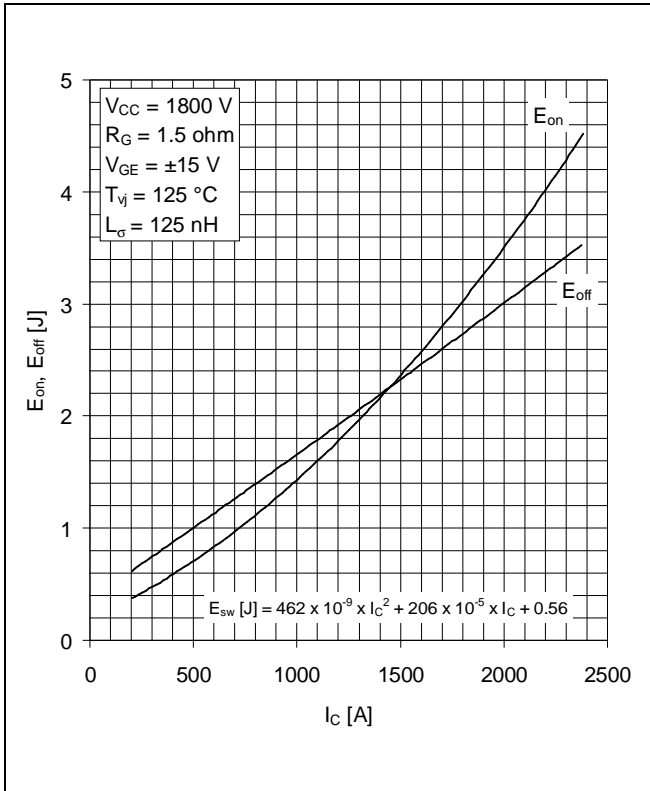


Fig. 5 Typical switching energies per pulse vs collector current

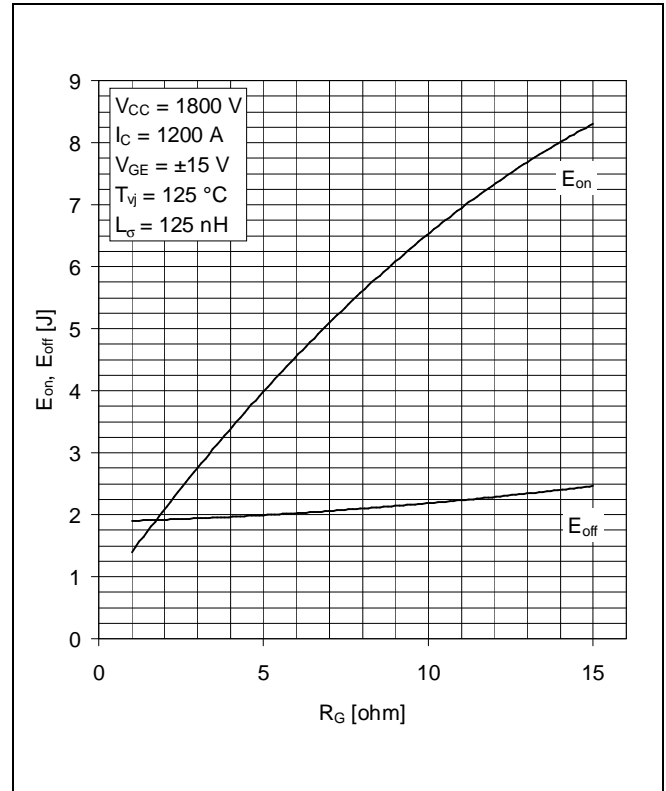


Fig. 6 Typical switching energies per pulse vs gate resistor

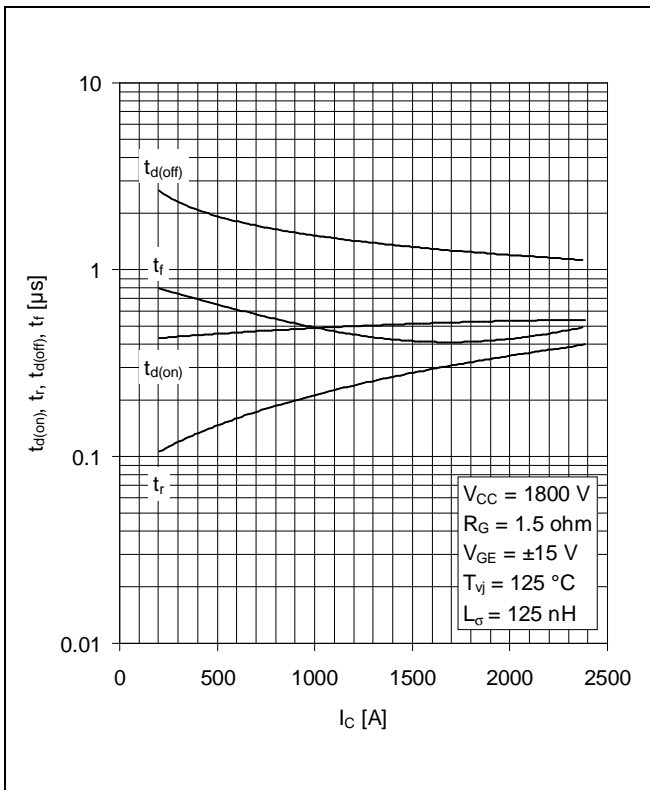


Fig. 7 Typical switching times vs collector current

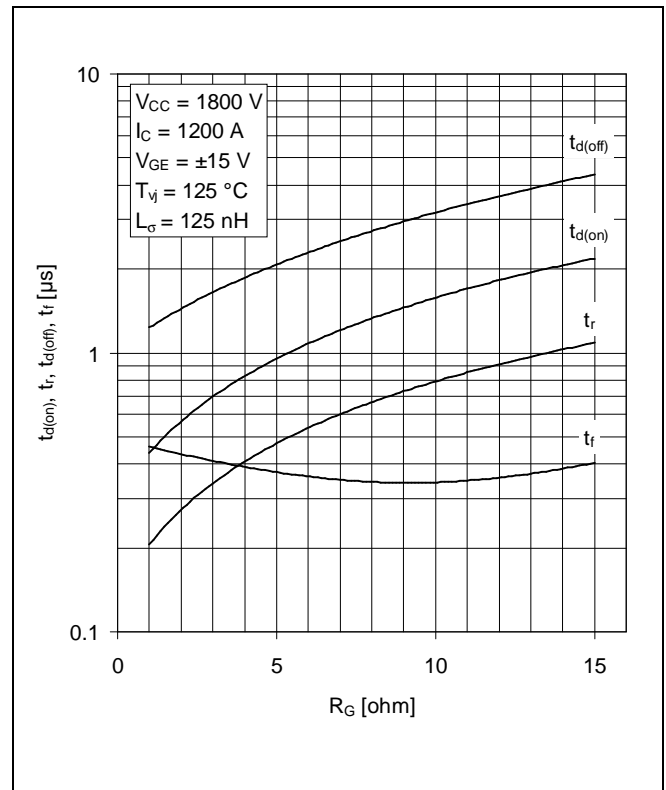
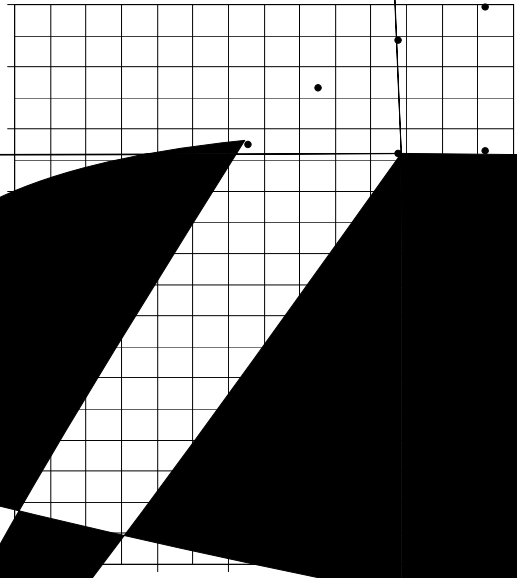
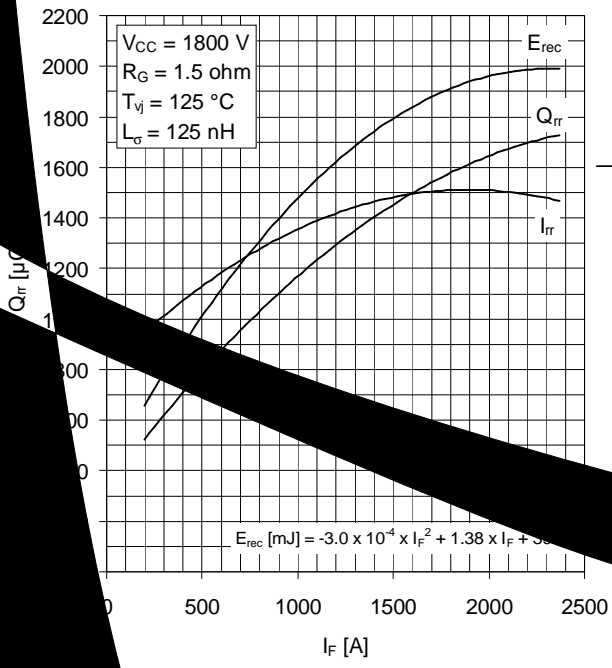


Fig. 8 Typical switching times vs gate resistor



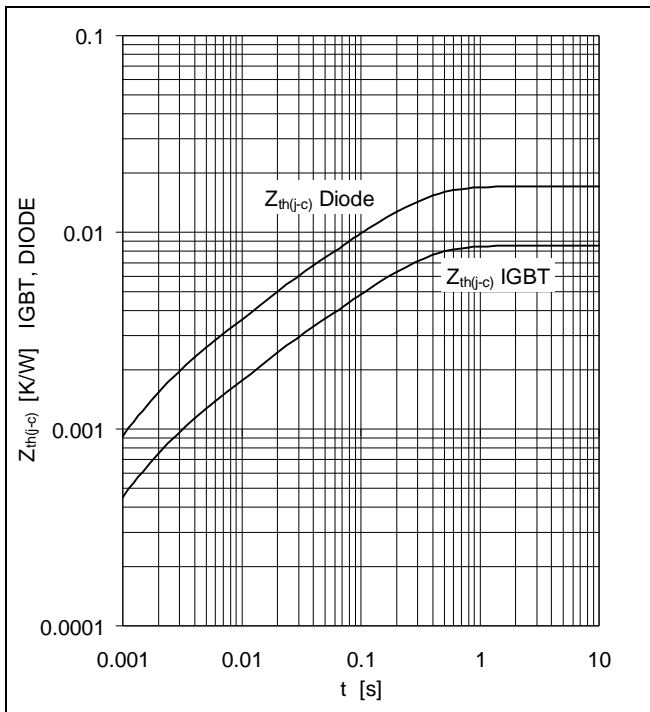


Fig. 16 Thermal impedance vs time

Analytical function for transient thermal impedance:

$$Z_{th(j-c)}(t) = \sum_{i=1}^n R_i (1 - e^{-t/\tau_i})$$

	i	1	2	3	4	5
IGBT	R _i (K/kW)	5.85	1.38	0.641	0.632	
	τ _i (ms)	207	30.1	7.55	1.57	
DIODE	R _i (K/kW)	11.5	2.89	1.23	1.3	
	τ _i (ms)	204	30.1	7.53	1.57	

For detailed information refer to:

- 5SYA 2042-02 Failure rates of HiPak modules due to cosmic rays
- 5SYA 2043-01 Load – cycle capability of HiPaks
- 5SZK 9120-00 Specification of environmental class for HiPak

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ABB Switzerland Ltd
Semiconductors
 Fabrikstrasse 3
 CH-5600 Lenzburg, Switzerland

Telephone +41 (0)58 586 1419
 Fax +41 (0)58 586 1306
 Email abbsem@ch.abb.com
 Internet www.abb.com/semiconductors