

V_{CE} = 6500 V

I_C = 600 A

ABB Switzerland Ltd, Semiconductors reserves the right to change specifications without notice.



IGBT characteristic values ³⁾

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector (-emitter) breakdown voltage	$V_{(BR)CES}$	$V_{GE} = 0 \text{ V}$, $I_C = 10 \text{ mA}$, $T_{vj} = 25 \text{ °C}$	6500			V
Collector-emitter ⁴⁾ saturation voltage	$V_{CE \text{ sat}}$	$I_C = 600 \text{ A}$, $V_{GE} = 15 \text{ V}$	$T_{vj} = 25 \text{ °C}$	4.2	4.8	V
			$T_{vj} = 125 \text{ °C}$	5.4	5.9	V
Collector cut-off current	I_{CES}	$V_{CE} = 6500 \text{ V}$, $V_{GE} = 0 \text{ V}$	$T_{vj} = 25 \text{ °C}$		12	mA
			$T_{vj} = 125 \text{ °C}$	70	120	mA
Gate leakage current	I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$, $T_{vj} = 125 \text{ °C}$	-500		500	nA
Gate-emitter threshold voltage	$V_{GE(TO)}$	$I_C = 240 \text{ mA}$, $V_{CE} = V_{GE}$, $T_{vj} = 25 \text{ °C}$	6.5	7.4	8.0	V
Gate charge	Q_{ge}	$I_C = 600 \text{ A}$, $V_{CE} = 3600 \text{ V}$, $V_{GE} = -15 \text{ V} \dots 15 \text{ V}$		8.0		μC
Input capacitance	C_{ies}			143		
Output capacitance	C_{oes}			6.62		

Reverse sj-0.25776 Tc (e) fstanapance

V

Diode characteristic values⁵⁾

Parameter	Symbol	Conditions	min	typ	max	Unit
Forward voltage ⁶⁾	V_F	$I_F = 600 \text{ A}$	$T_{vj} = 25 \text{ °C}$	3.2	3.8	V
			$T_{vj} = 125 \text{ °C}$	3.4	4.0	
Reverse recovery current	I_{rr}	$V_{CC} = 3600 \text{ V},$ $I_F = 600 \text{ A},$ $V_{GE} = \pm 15 \text{ V},$ $R_G = 3.9 \text{ } \Omega$ $L_\sigma = 280 \text{ nH}$ inductive load	$T_{vj} = 25 \text{ °C}$	790		A
			$T_{vj} = 125 \text{ °C}$	990		
Recovered charge	Q_{rr}	$V_{CC} = 3600 \text{ V},$ $I_F = 600 \text{ A},$ $V_{GE} = \pm 15 \text{ V},$ $R_G = 3.9 \text{ } \Omega$ $L_\sigma = 280 \text{ nH}$ inductive load	$T_{vj} = 25 \text{ °C}$	700		μC
			$T_{vj} = 125 \text{ °C}$	1200		
Reverse recovery time	t_{rr}	$V_{CC} = 3600 \text{ V},$ $I_F = 600 \text{ A},$ $V_{GE} = \pm 15 \text{ V},$ $R_G = 3.9 \text{ } \Omega$ $L_\sigma = 280 \text{ nH}$ inductive load	$T_{vj} = 25 \text{ °C}$	1700		ns
			$T_{vj} = 125 \text{ °C}$	2200		
Reverse recovery energy	E_{rec}	$V_{CC} = 3600 \text{ V},$ $I_F = 600 \text{ A},$ $V_{GE} = \pm 15 \text{ V},$ $R_G = 3.9 \text{ } \Omega$ $L_\sigma = 280 \text{ nH}$ inductive load	$T_{vj} = 25 \text{ °C}$	1100		mJ
			$T_{vj} = 125 \text{ °C}$	2200		

⁵⁾ Characteristic values according to IEC 60747 – 2

⁶⁾ Forward voltage is given at chip level

Package properties⁷⁾

Parameter	Symbol	Conditions	min	typ	max	Unit
IGBT thermal resistance junction to case	$R_{th(j-c)IGBT}$				0.011	K/W
Diode thermal resistance junction to case	$R_{th(j-c)DIODE}$				0.021	K/W
Thermal resistance case ²⁾ to heatsink	$R_{th(c-s)}$	per module, λ grease = $1\text{W/m} \times \text{K}$		0.006		K/W
Partial discharge extinction voltage	V_e	$f = 50 \text{ Hz}, Q_{PD} \leq 10\text{pC}$ (acc. to IEC 61287)	5100			V
Comparative tracking index	CTI			≥ 600		

²⁾ For detailed mounting instructions refer to ABB Document No. 5SYA2039

Mechanical properties⁷⁾

Parameter	Symbol	Conditions	min	typ	max	Unit
Dimensions	$L \times W \times H$	Typical, see outline drawing	190 × 140 × 48			mm
Clearance distance in air	d_a	according to IEC 60664-1 and EN 50124-1	Term. to base:	40		mm
			Term. to term:	26		
Surface creepage distance	d_s	according to IEC 60664-1 and EN 50124-1	Term. to base:	64		mm
			Term. to term:	56		
Mass	m			1760		g

⁷⁾ Package and mechanical properties according to IEC 60747 – 15

579468213

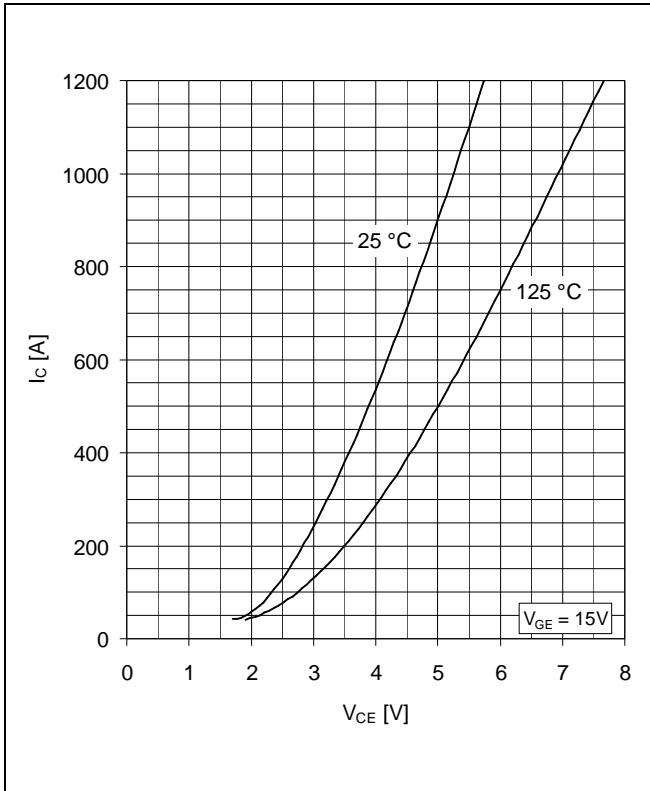


Fig. 1 Typical on-state characteristics, chip level

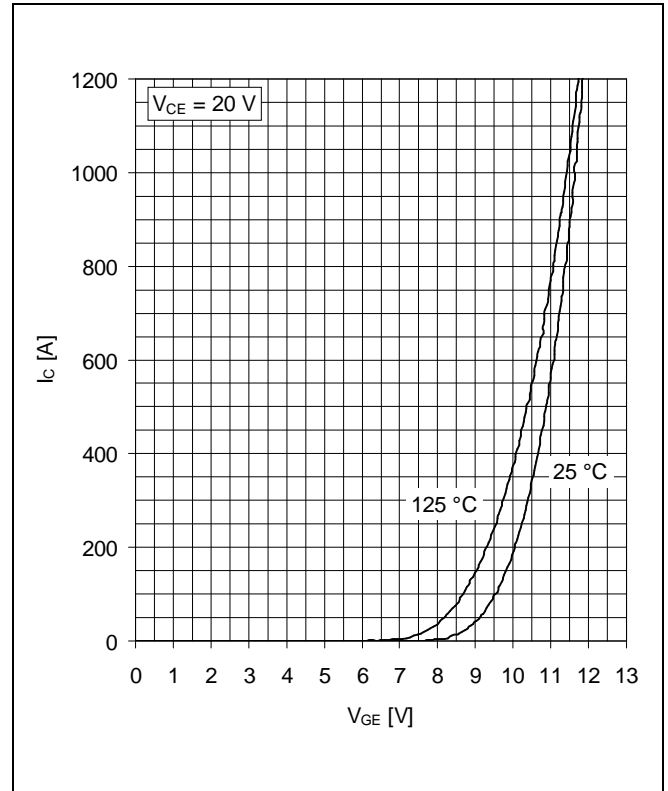


Fig. 2 Typical transfer characteristics, chip level

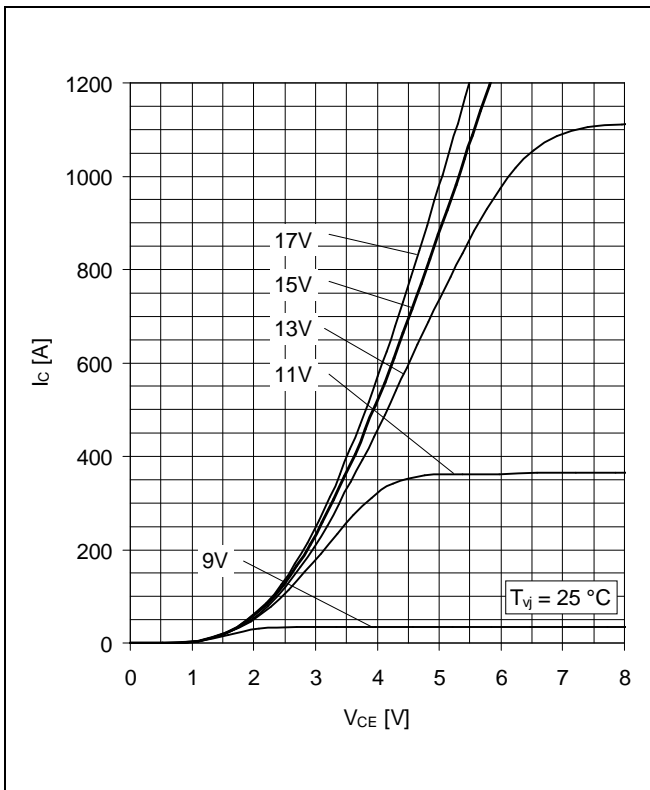


Fig. 3 Typical output characteristics, chip level

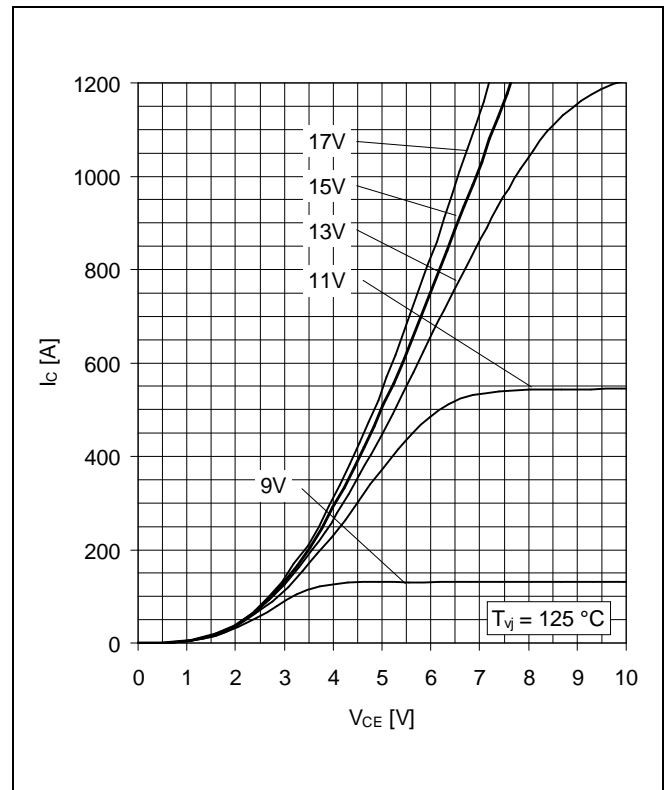
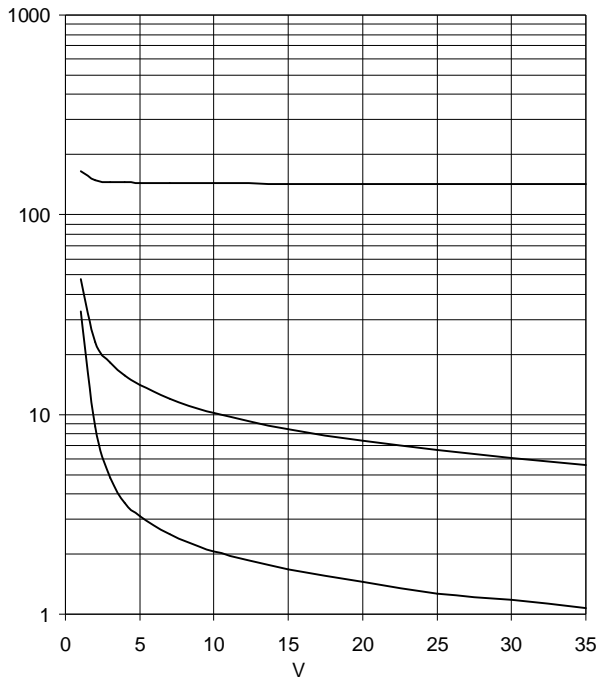


Fig. 4 Typical output characteristics, chip level



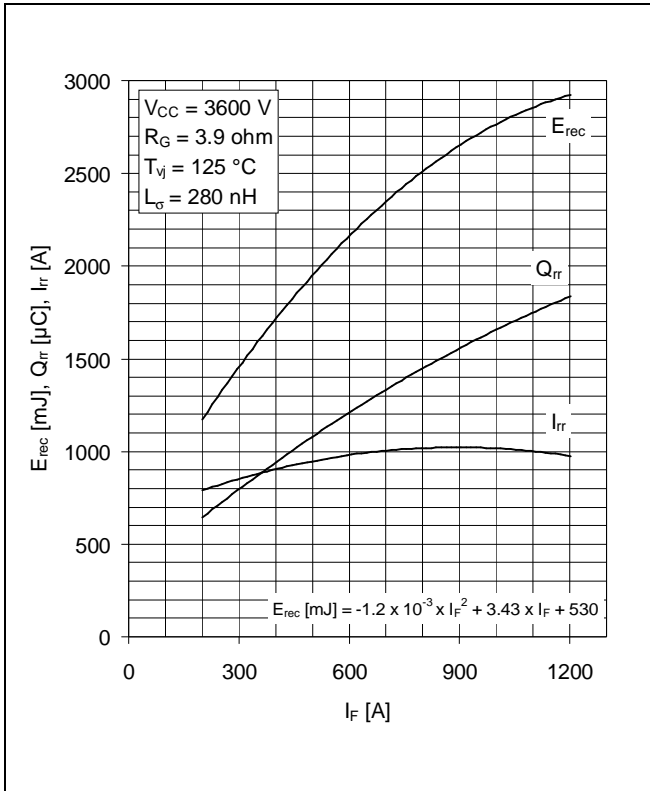


Fig. 12 Typical reverse recovery characteristics vs forward current

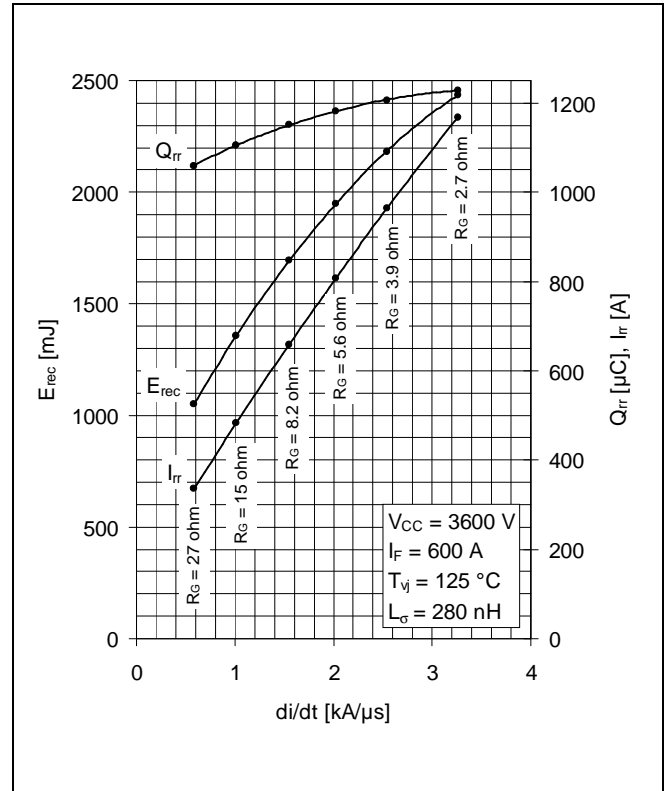


Fig. 13 Typical reverse recovery characteristics vs di/dt

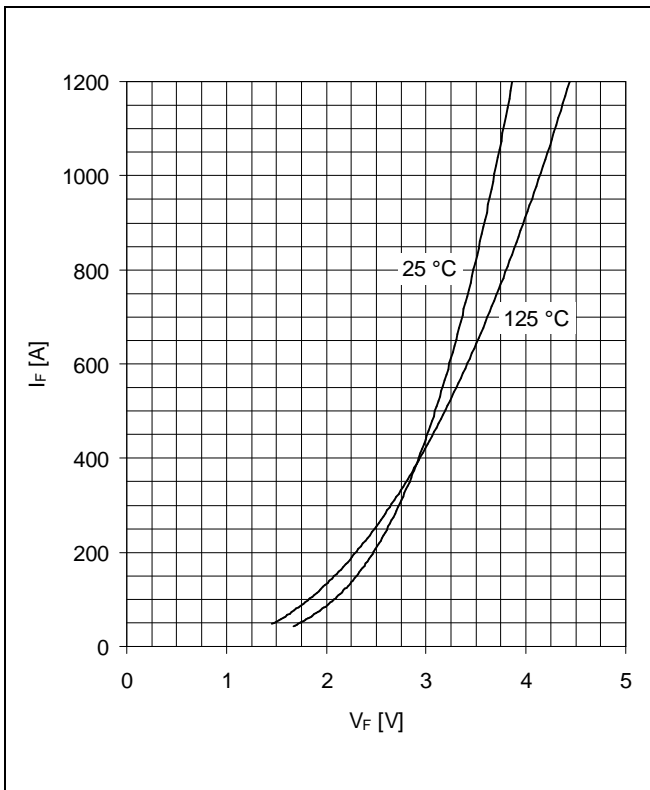


Fig. 14 Typical diode forward characteristics, chip level

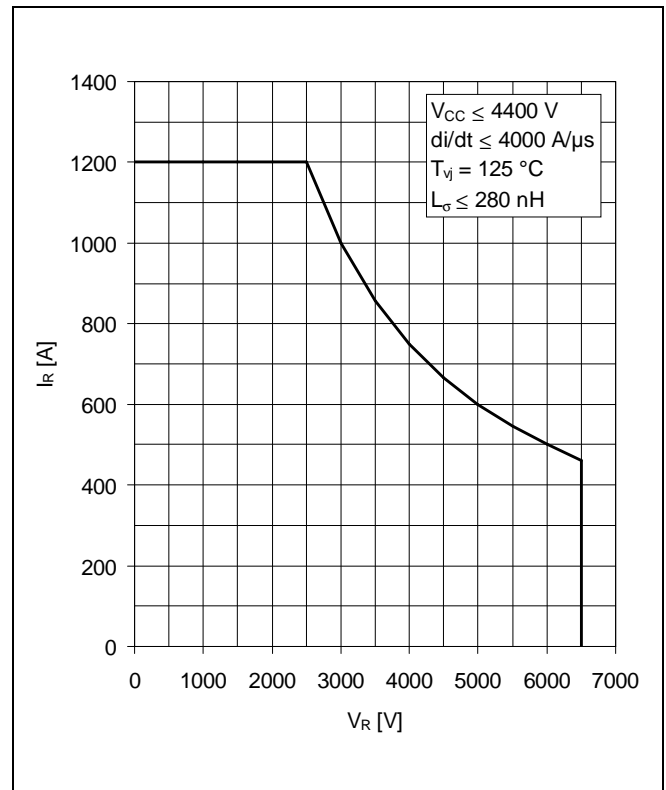


Fig. 15 Safe operating area diode (SOA)

ABB Switzerland Ltd, Semiconductors reserves the right to change specifications without notice.



**ABB Switzerland Ltd
Seoca**

Doc. No. 5SYA1558-02 Jan 06
wesebca5-0.03Tj0.0255.1(J) Tk-0.021 Tc (r) 0.084 Tc (e)tcac (r) Tj-0.1 (r)