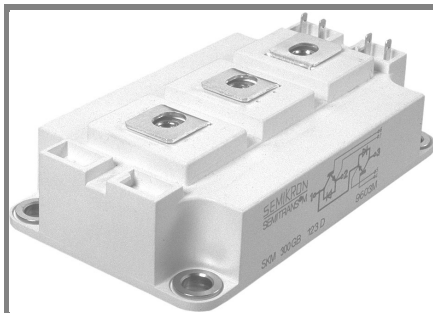


SKM 400GB124D



SEMITRANS™ 3

Low Loss IGBT Modules

SKM 400GB124D

SKM 400GAL124D

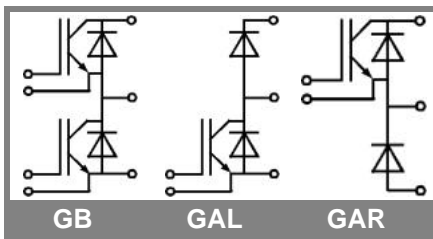
SKM 400GAR124D

Features

- MOS input (voltage controlled)
- N channel, homogeneous Si-structure (NPT- Non punch-through IGBT)
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{C\text{NOM}}$
- Latch-up free
- Fast & soft inverse CAL Diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (12 mm) and creepage distance (20 mm)

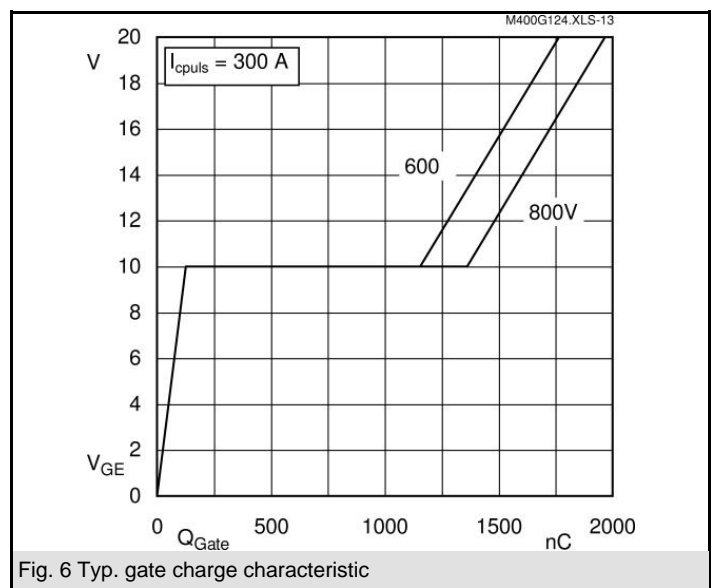
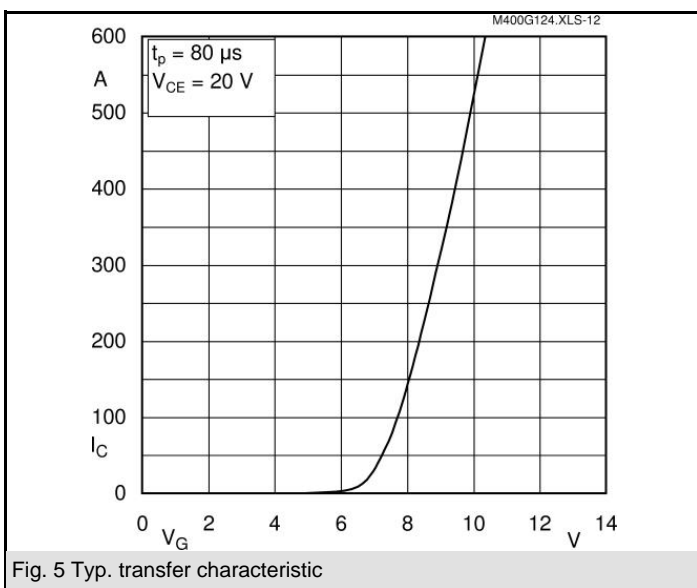
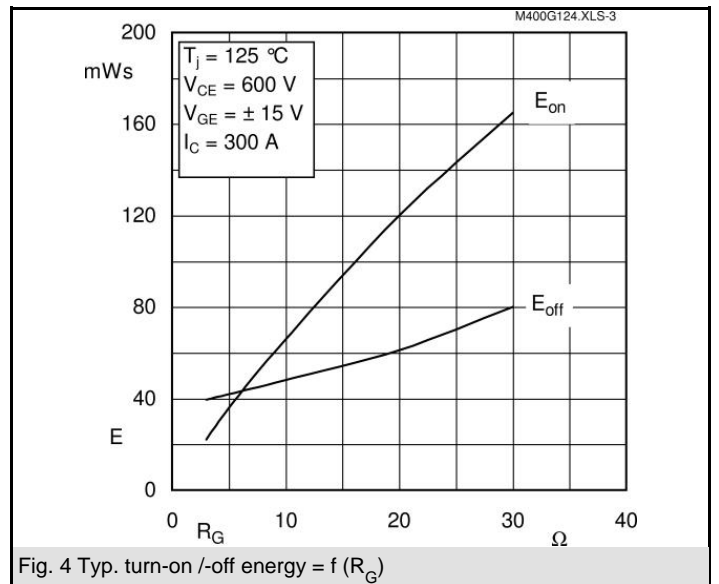
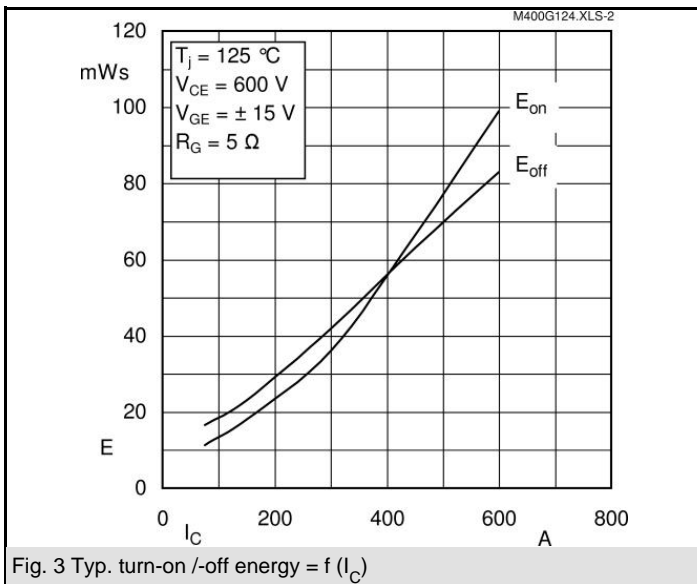
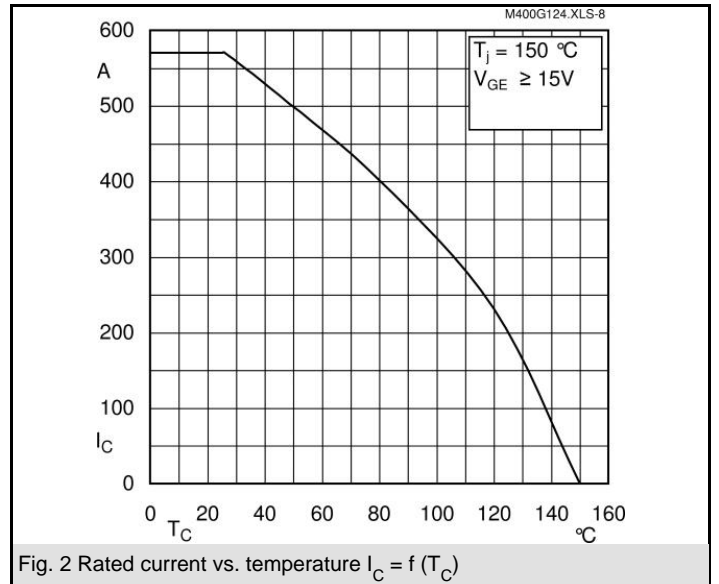
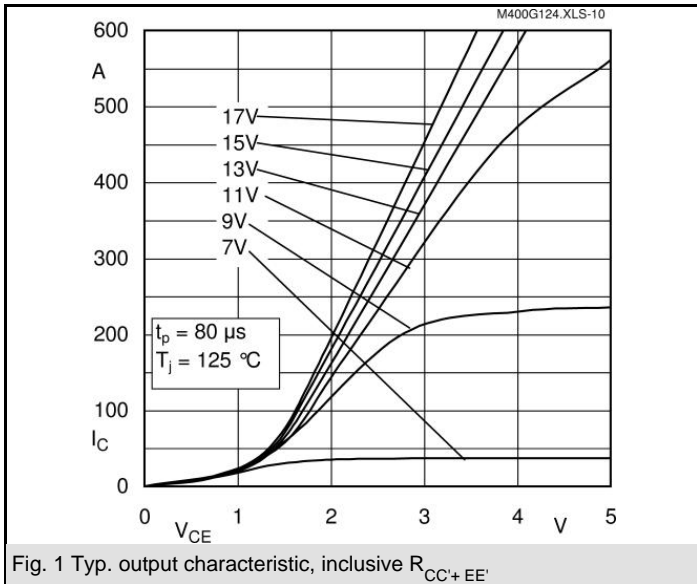
Typical Applications

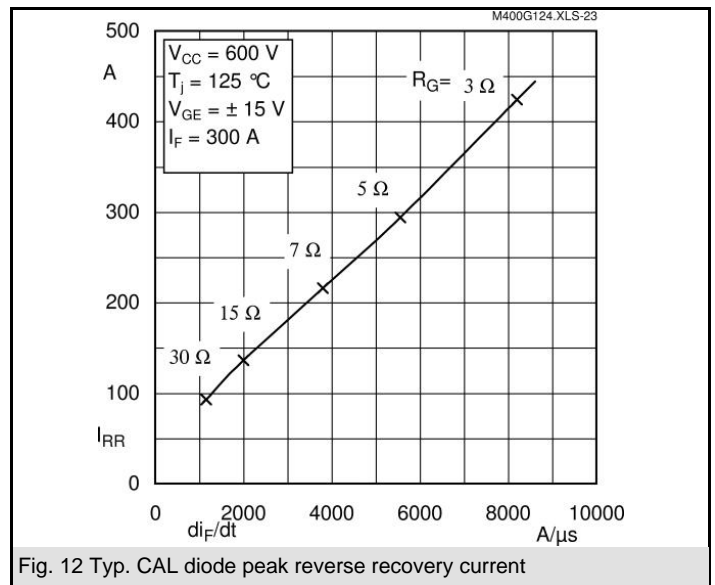
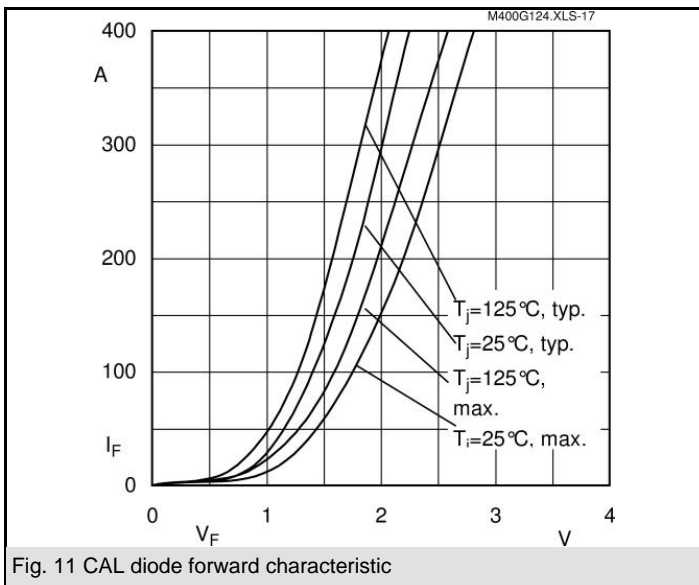
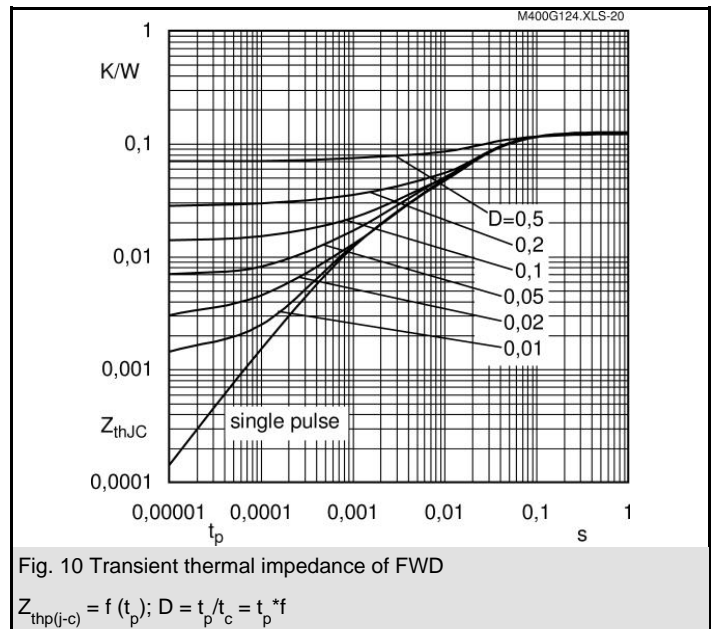
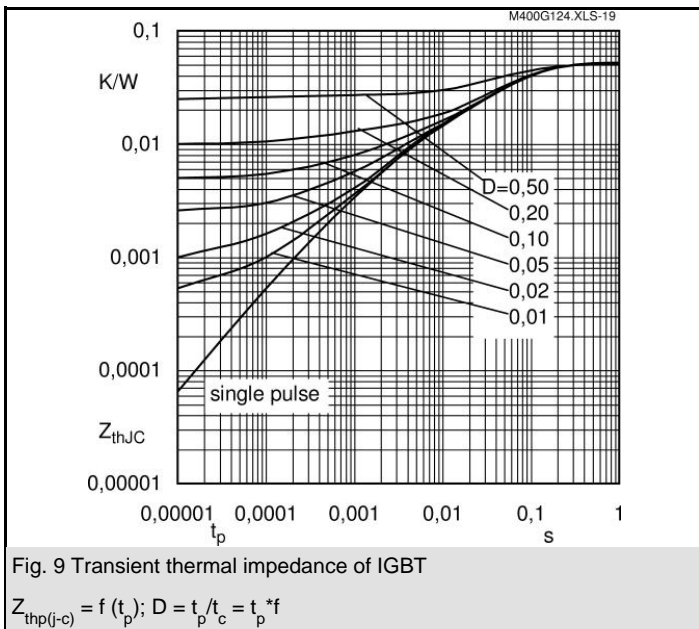
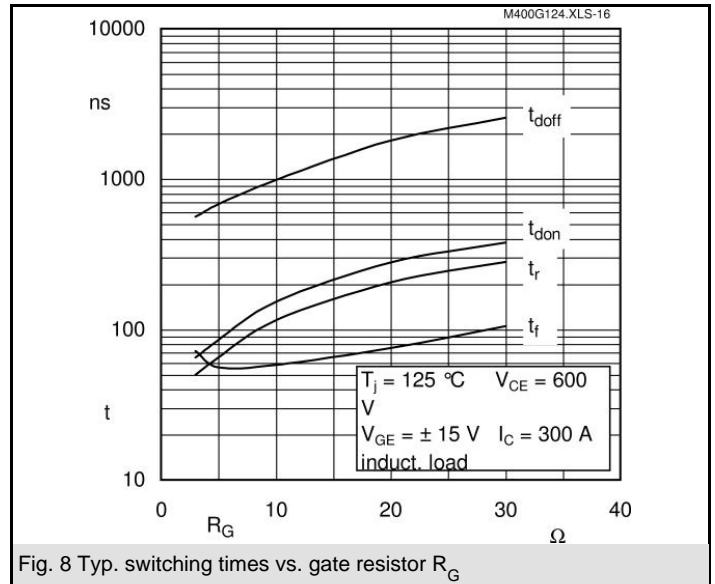
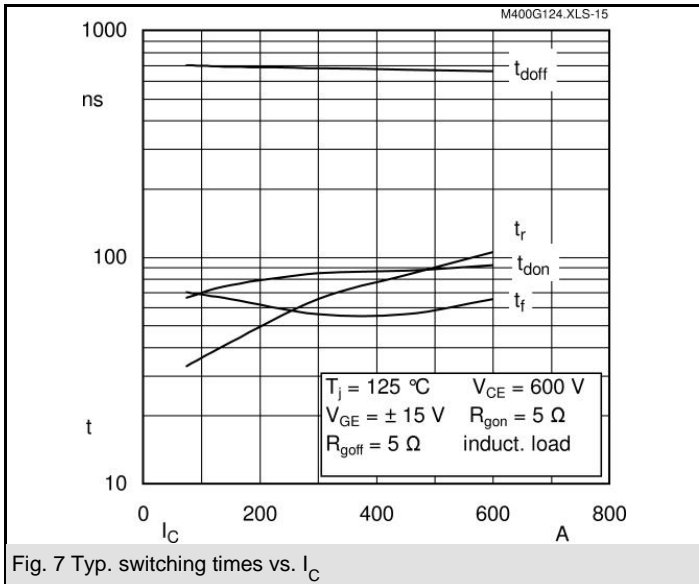
- Switching (not for lineal use)
- Inverter drives
- UPS



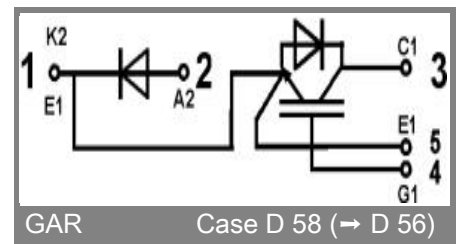
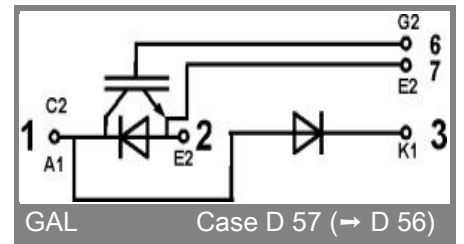
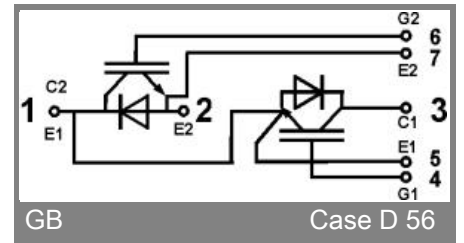
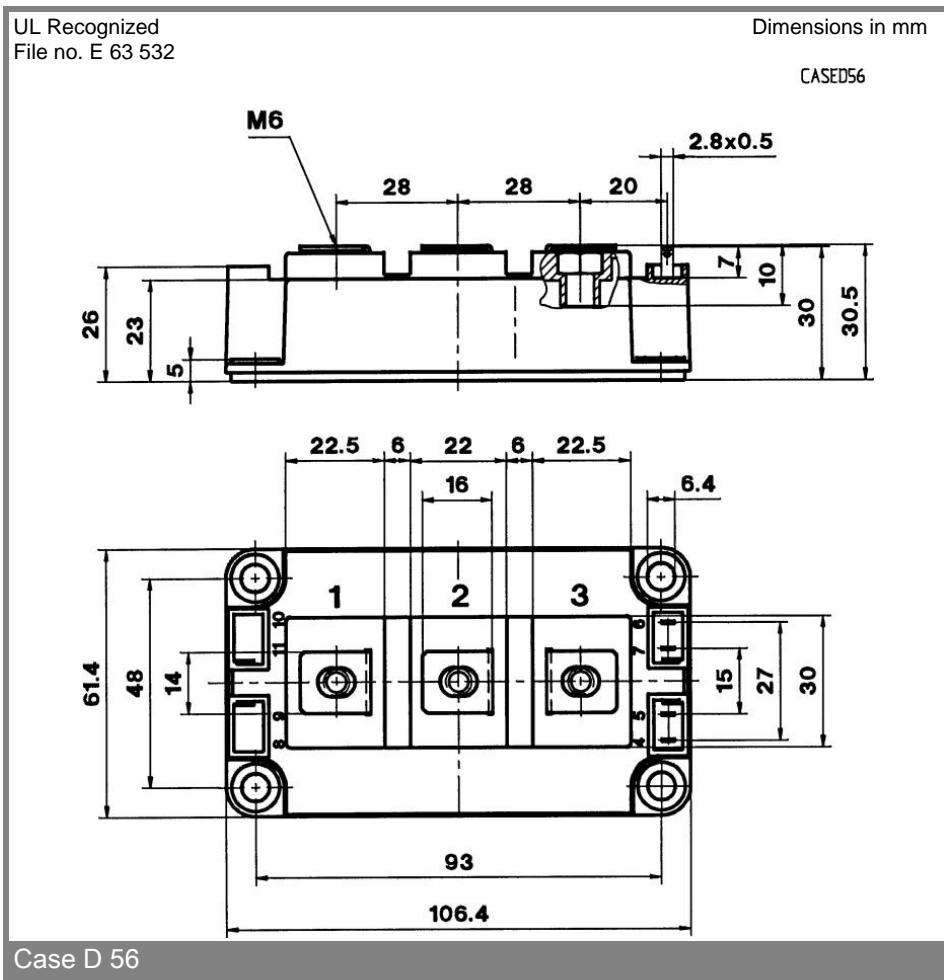
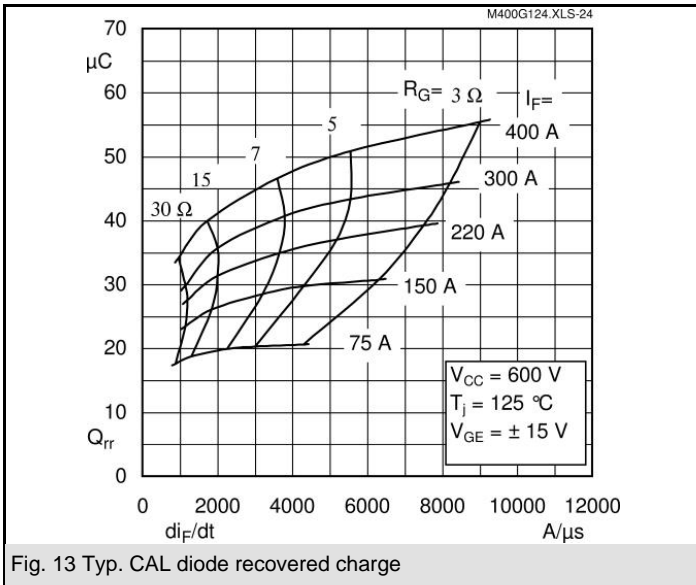
Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{C}	$T_c = 25 (80)^\circ\text{C}$	570 (400)	A
I_{CRM}	$t_p = 1 \text{ ms}$	600	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{\text{OPERATION}} \leq T_{\text{stg}}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_{F}	$T_c = 25 (80)^\circ\text{C}$	390 (260)	A
I_{FRM}	$t_p = 1 \text{ ms}$	600	A
I_{FSM}	$t_p = 10 \text{ ms}; \text{sin.}; T_j = 150^\circ\text{C}$	2900	A
Freewheeling diode			
I_{F}	$T_c = 25 (80)^\circ\text{C}$	390 (260)	A
I_{FRM}	$t_p = 1 \text{ ms}$	600	A
I_{FSM}	$t_p = 10 \text{ ms}; \text{sin.}; T_j = 150^\circ\text{C}$	2900	A

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{\text{GE(th)}}$	$V_{\text{GE}} = V_{\text{CE}}, I_{\text{C}} = 12 \text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{\text{GE}} = 0, V_{\text{CE}} = V_{\text{CES}}, T_j = 25 (125)^\circ\text{C}$		0,2	0,6	mA
$V_{\text{CE(TO)}}$	$T_j = 25 (125)^\circ\text{C}$		1,1 (1,1)	1,25 (1,25)	V
r_{CE}	$V_{\text{GE}} = 15 \text{ V}, T_j = 25 (125)^\circ\text{C}$		3,3 (4,3)	4 (5,3)	m Ω
$V_{\text{CE(sat)}}$	$I_{\text{Cnom}} = 300 \text{ A}, V_{\text{GE}} = 15 \text{ V}$, chip level		2,1 (2,4)	2,45 (2,85)	V
C_{res}	under following conditions		22	30	nF
C_{oes}	$V_{\text{GE}} = 0, V_{\text{CE}} = 25 \text{ V}, f = 1 \text{ MHz}$		3,3	4	nF
C_{res}			1,2	1,6	nF
L_{CE}				20	nH
$R_{\text{CC'+EE'}}$	res., terminal-chip $T_c = 25 (125)^\circ\text{C}$		0,35 (0,5)		m Ω
$t_{\text{d(on)}}$	$V_{\text{CC}} = 600 \text{ V}, I_{\text{Cnom}} = 300 \text{ A}$		85		ns
t_{r}	$R_{\text{Gon}} = R_{\text{Goff}} = 5 \Omega, T_j = 125^\circ\text{C}$		65		ns
$t_{\text{d(off)}}$	$V_{\text{GE}} = \pm 15 \text{ V}$		680		ns
t_{f}			56		ns
$E_{\text{on}} (E_{\text{off}})$			36 (42)		mJ
Inverse diode					
$V_{\text{F}} = V_{\text{EC}}$	$I_{\text{Fnom}} = 300 \text{ A}; V_{\text{GE}} = 0 \text{ V}; T_j = 25 (125)^\circ\text{C}$		2 (1,8)	2,5	V
$V_{\text{(TO)}}$	$T_j = (125)^\circ\text{C}$		(1,1)	(1,2)	V
r_{T}	$T_j = (125)^\circ\text{C}$			(3,5)	m Ω
I_{RRM}	$I_{\text{Fnom}} = 300 \text{ A}; T_j = (125)^\circ\text{C}$		(136)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		36		μC
E_{rr}	$V_{\text{GE}} = \text{V}$				mJ
FWD					
$V_{\text{F}} = V_{\text{EC}}$	$I_{\text{F}} = 300 \text{ A}; V_{\text{GE}} = 0 \text{ V}, T_j = 25 (125)^\circ\text{C}$		2 (1,8)	2,5	V
$V_{\text{(TO)}}$	$T_j = (125)^\circ\text{C}$		(1,1)	(1,2)	V
r_{T}	$T_j = (125)^\circ\text{C}$			(3,5)	m Ω
I_{RRM}	$I_{\text{F}} = 300 \text{ A}; T_j = (125)^\circ\text{C}$		(136)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		36		μC
E_{rr}	$V_{\text{GE}} = \text{V}$				mJ
Thermal characteristics					
$R_{\text{th(j-c)}}$	per IGBT			0,05	K/W
$R_{\text{th(j-c)D}}$	per Inverse Diode			0,125	K/W
$R_{\text{th(j-c)FD}}$	per FWD			0,125	K/W
$R_{\text{th(c-s)}}$	per module			0,038	K/W
Mechanical data					
M_{s}	to heatsink M6	3		5	Nm
M_{t}	to terminals M6	2,5		5	Nm
w				325	g





SKM 400GB124D



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.