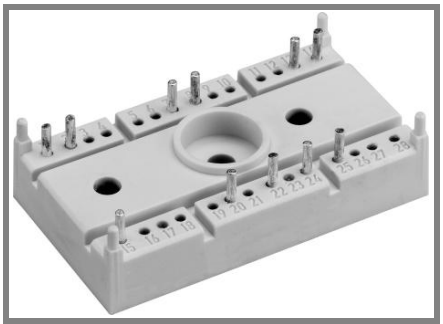
SK 74 DGL 063

CONVERTER, INVERTER, BRAKE



SEMITOP® 3

3-phase bridge rectifier + brake chopper

SK 74 DGL 063

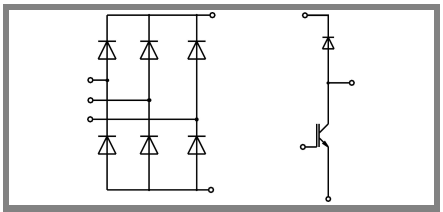
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded alumium oxide ceramic (DCB)
- Ultrafast NPT technology IGBT
- CAL Technology FW

Typical Applications*

- Rectifier



DGL

Absolute Maximum Ratings		T_s= 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Chopper			
V_{CES}		600	V
I_C	T_s = 25 (80) °C	45 (32)	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}, t_p = 1 ms	100	A
V_{GES}		±20	V
T_j		-40 ... +150	°C
Diode - Chopper			
I_F	T_s = 25 (80) °C	36 (24)	A
I_{FRM}	I_{FRM} = 2xI_{Fnom}, t_p = 1 ms	70	A
T_j		-40 ... +150	°C
Rectifier			
V_{RRM}		800	V
I_D	T_s = 80 °C	74	A
I_{FSM} / I_{TSM}	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	370	A
I^2t	t_p = 10 ms , sin 180 ° ,T_j = 25 °C	685	A²s
T_j		-40 ... +150	°C
T_{sol}	Terminals, 10s	260	°C
T_{stg}		-40 ... +125	°C
V_{isol}	AC, 1 min. / 1s	2500 / 3000	V

Characteristics		T_s= 25°C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Chopper					
V_{CEsat}	I_C = 30 A, T_j = () °C		1,8 (2)	2,1 (2,3)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,5 mA	3	4	5	V
$V_{CE(TO)}$	T_j = 25 °C (125) °C		0,85 (0,9)		V
r_T	T_j = 25 °C (125) °C		19 (22)		mΩ
C_{ies}	V_{CE} = 25 V_{GE} = 0 V, f = 1 MHz		2,6		nF
C_{oes}	V_{CE} = V_{GE} = 0 V, f = 1 MHz		-		nF
C_{res}	V_{CE} = V_{GE} = 0 V, f = 1 MHz		-		nF
$R_{th(j-s)}$	per IGBT			1	K/W
$t_{d(on)}$	under following conditions		45		ns
t_r	V_{CC} = 300 V, V_{GE} = ± 15 V		40		ns
$t_{d(off)}$	I_C = 30 A, T_j = °C		250		ns
t_f	R_{Gon} = R_{Goff} = 22 Ω		30		ns
E_{on}	inductive load		1,45		mJ
E_{off}			1,2		mJ
Diode - Chopper					
V_F = V_{EC}	I_F = 30 A, T_j = () °C		1,45 (1,4)	1,7 (1,75)	V
$V_{(TO)}$	T_j = °C (125) °C		(0,85)	(0,9)	V
r_T	T_j = °C (125) °C		(22)	(16)	mΩ
$R_{th(j-s)}$	per diode			1,7	K/W
I_{RRM}	under following conditions		16		A
Q_{rr}	I_F = 25 A, V_R = 300 V		2		µC
E_{rr}	V_{GE} = 0 V, T_j = °C		25		mJ
	$di_{F/dt}$ = 500 A/µs				
Diode rectifier					
V_F	I_F = 30 A, T_j = () °C		1,25		V
$V_{(TO)}$	T_j = 150 °C		0,8		V
r_T	T_j = 150 °C		13		mΩ
$R_{th(j-s)}$	per diode			1,7	K/W
Temperatur sensor					
R_{ts}	%, T_r = ( ) °C		()		Ω
Mechanical data					
w			30		g
M_s	Mounting torque	2,25		2,5	Nm

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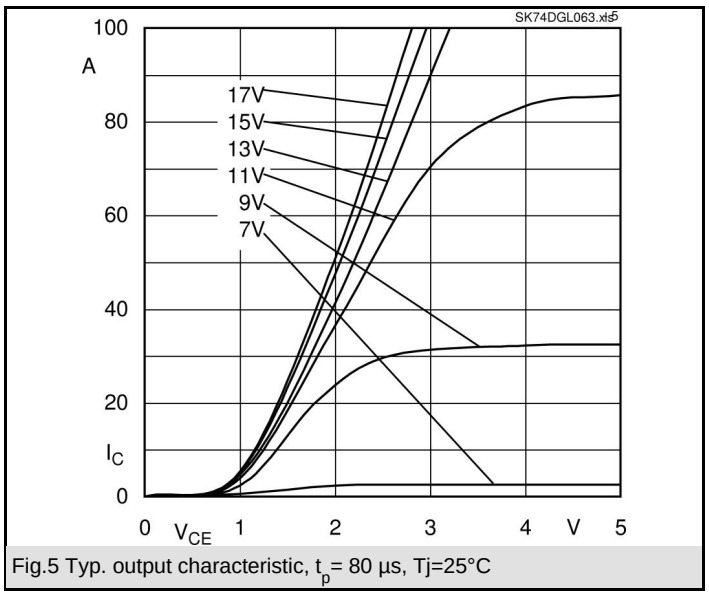


Fig.5 Typ. output characteristic, t_p= 80 µs, Tj=25°C

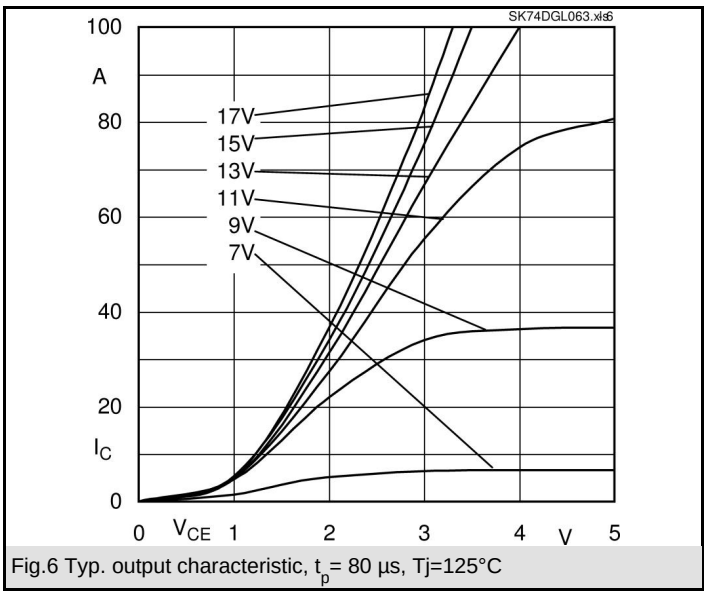


Fig.6 Typ. output characteristic, t_p= 80 µs, Tj=125°C

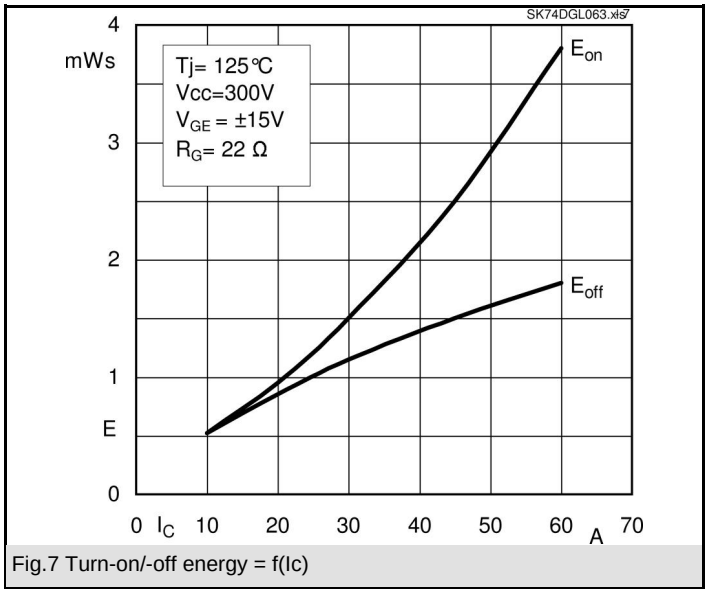


Fig.7 Turn-on/-off energy = f(Ic)

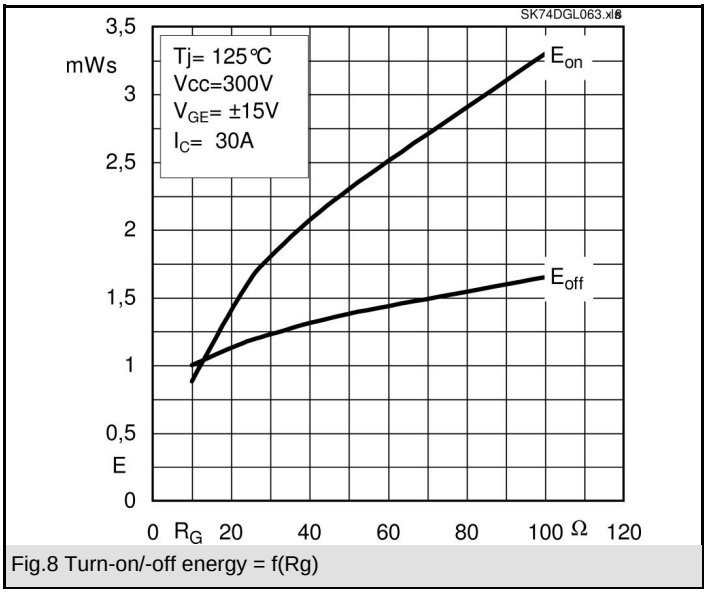


Fig.8 Turn-on/-off energy = f(Rg)

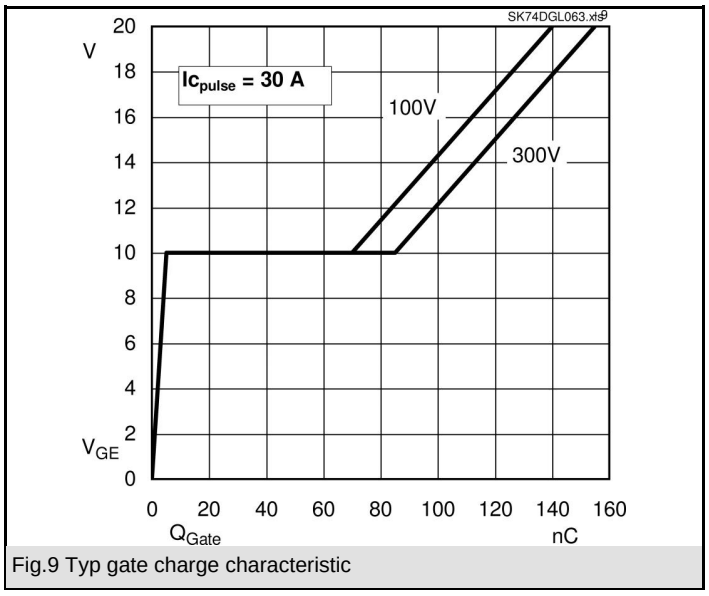


Fig.9 Typ gate charge characteristic

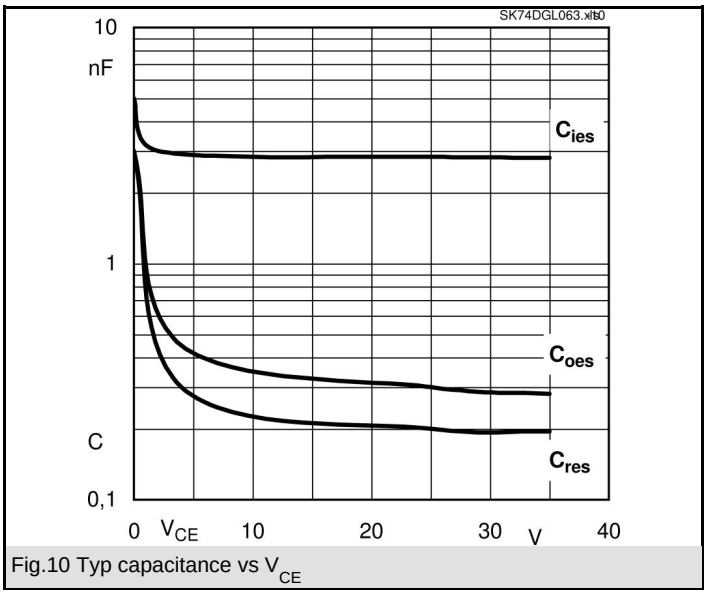


Fig.10 Typ capacitance vs V_{CE}

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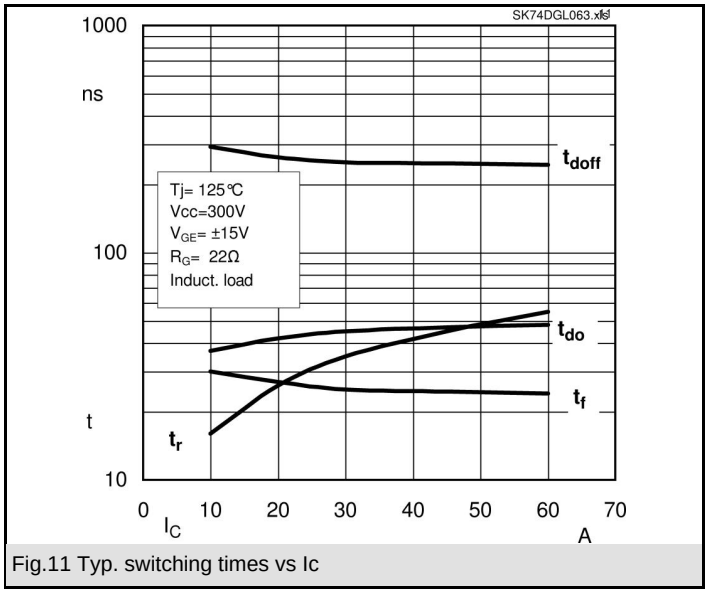


Fig.11 Typ. switching times vs Ic

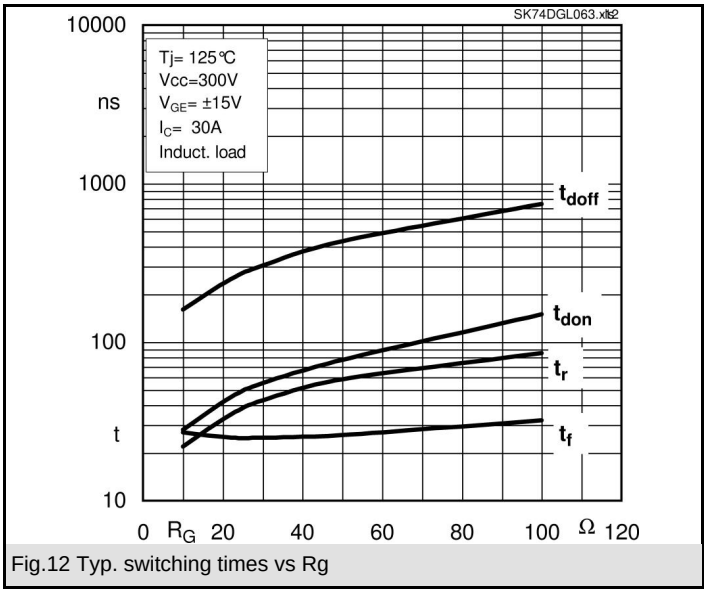


Fig.12 Typ. switching times vs Rg

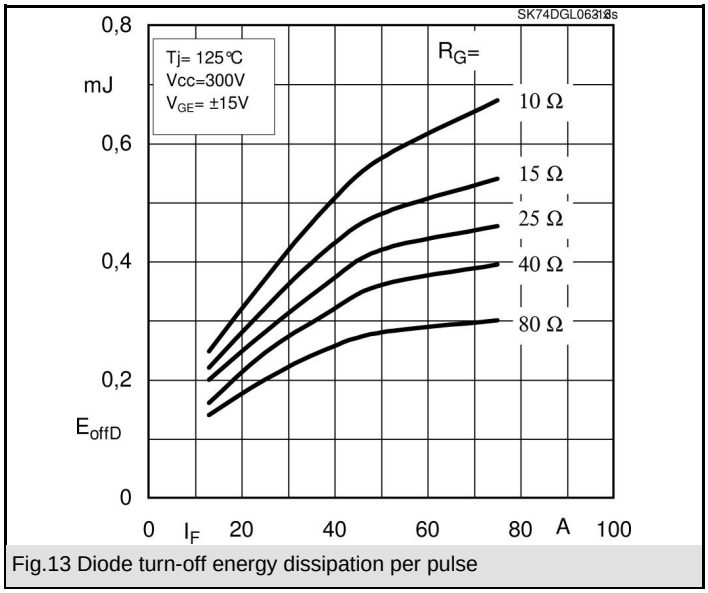


Fig.13 Diode turn-off energy dissipation per pulse

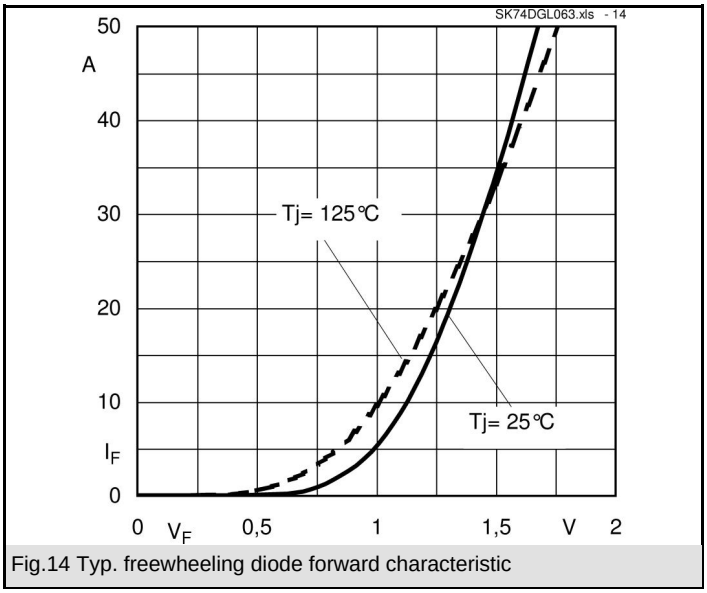


Fig.14 Typ. freewheeling diode forward characteristic

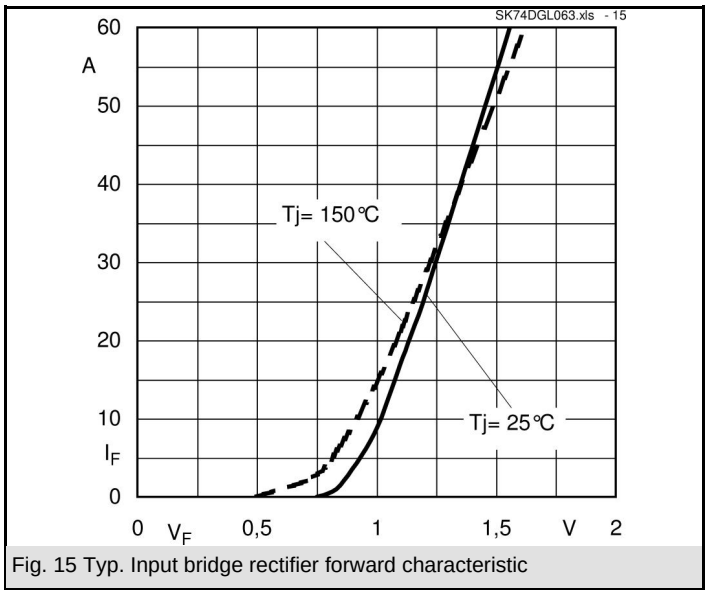
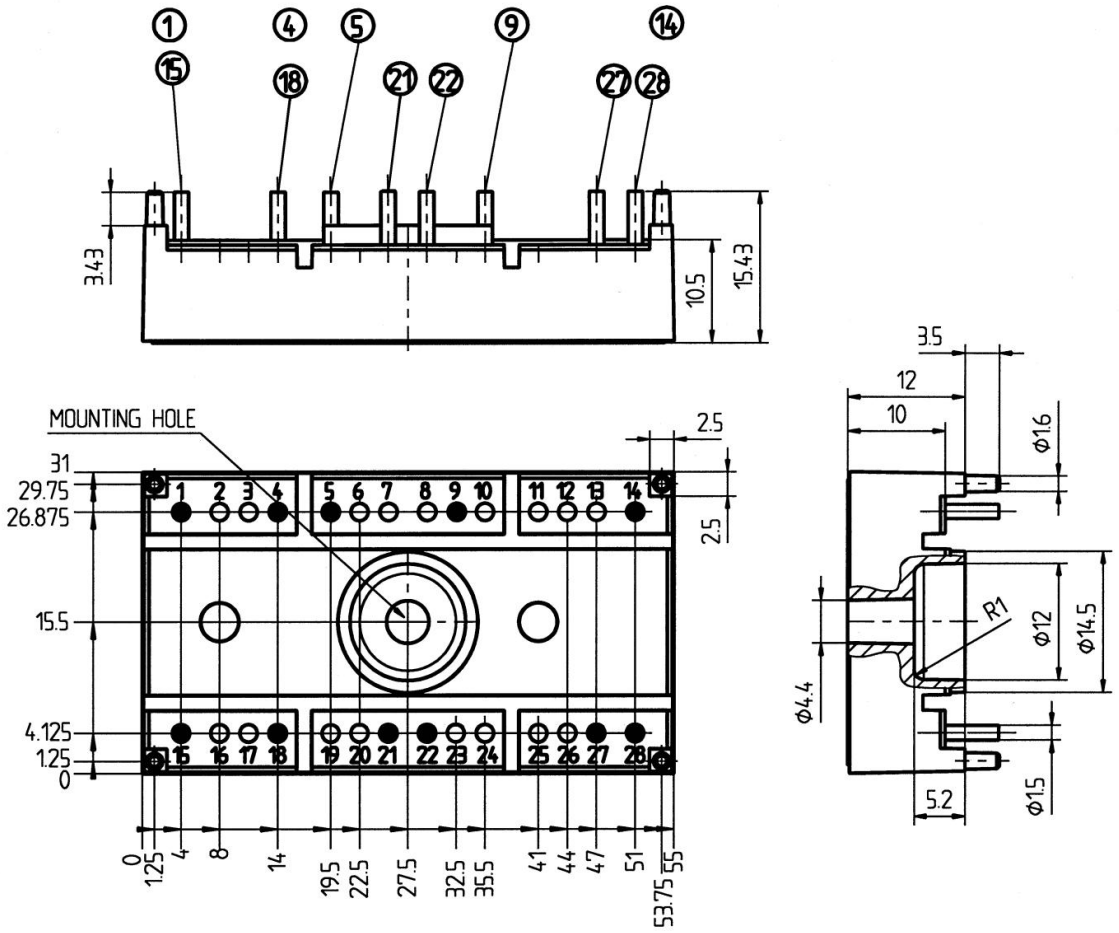


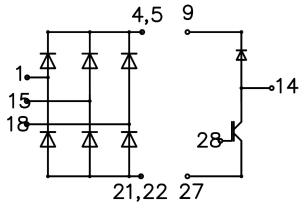
Fig. 15 Typ. Input bridge rectifier forward characteristic

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Dimensions in mm



Case T 14 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 14

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

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