

# SKM 800GA125D



**SEMITRANS® 4**

## Ultrafast IGBT Modules

**SKM 800GA125D**

### Features

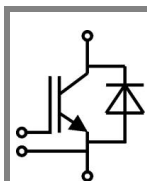
- Homogeneous Si
- NPT-IGBT
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

### Typical Applications

- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at fsw > 20 kHz

### Remarks

- $I_{DC} \leq 500$  A limited by terminals
- Take care of over-voltage caused by stray inductances



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Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200			V
$I_C$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	760		A
		$T_{case} = 80^\circ\text{C}$	530		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	1200			A
$V_{GES}$		$\pm 20$			V
$t_{psc}$	$V_{CC} = 600$ V; $V_{GE} \leq 20$ V; $T_j = 125^\circ\text{C}$ $V_{CES} < 1200$ V	10			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	720		A
		$T_{case} = 80^\circ\text{C}$	500		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	1200			A
$I_{FSM}$	$t_p = 10$ ms; sin.	$T_j = 150^\circ\text{C}$	5700		A
<b>Module</b>					
$I_{t(RMS)}$		500			A
$T_{vj}$		- 40 ... +150 (125)			$^\circ\text{C}$
$T_{stg}$		125			$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	4000			V

Characteristics		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
<b>IGBT</b>						
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 24$ mA	4,5	5,5	6,5	V	
$I_{CES}$	$V_{GE} = 0$ V, $V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,2		0,6	mA
		$T_j = 125^\circ\text{C}$				mA
$V_{CE0}$		$T_j = 25^\circ\text{C}$	1,5		1,75	V
		$T_j = 125^\circ\text{C}$	1,7			V
$r_{CE}$	$V_{GE} = 15$ V	$T_j = 25^\circ\text{C}$	2,8		3,3	m $\Omega$
		$T_j = 125^\circ\text{C}$	3,8		5,4	m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 600$ A, $V_{GE} = 15$ V	$T_j = 25^\circ\text{C}_{chiplev.}$	3,2		3,75	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	4			V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0$ V	$f = 1$ MHz	37		nF	
$C_{oes}$			5,6		nF	
$C_{res}$			2,8		nF	
$R_{Gint}$	$T_j = ^\circ\text{C}$	1,7			$\Omega$	
$t_{d(on)}$	$R_{Gon} = 0,5$ $\Omega$	$V_{CC} = 600$ V $I_C = 600$ A	88		ns	
$t_r$					ns	
$E_{on}$	$R_{Goff} = 0,5$ $\Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15$ V	48		mJ	
$t_{d(off)}$					ns	
$t_f$					ns	
$E_{off}$			48		mJ	
$R_{th(j-c)}$	per IGBT	0,03			K/W	



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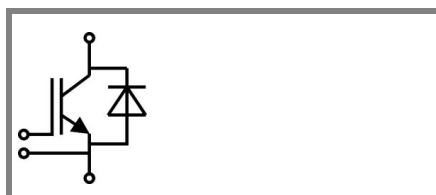
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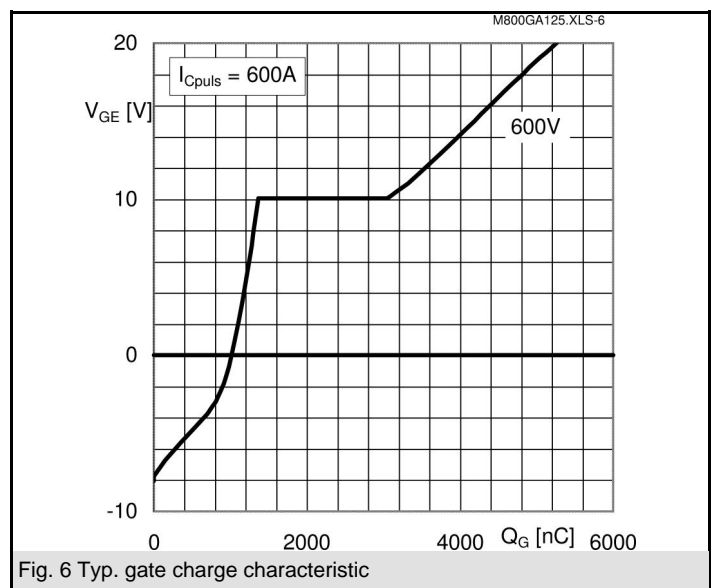
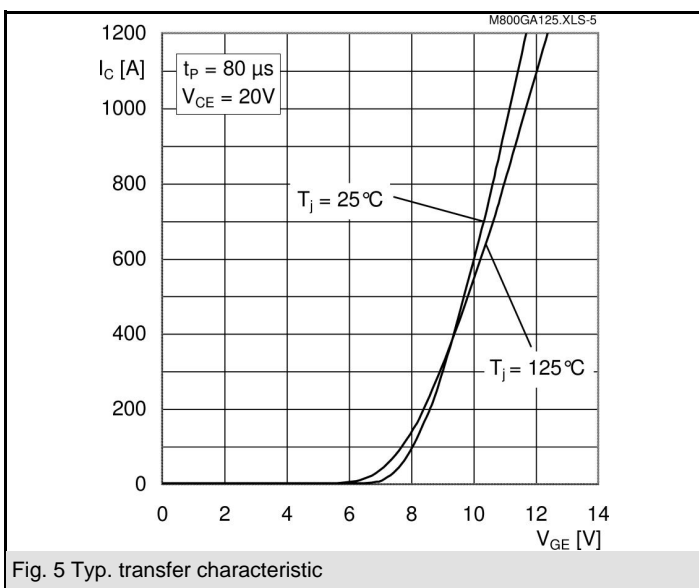
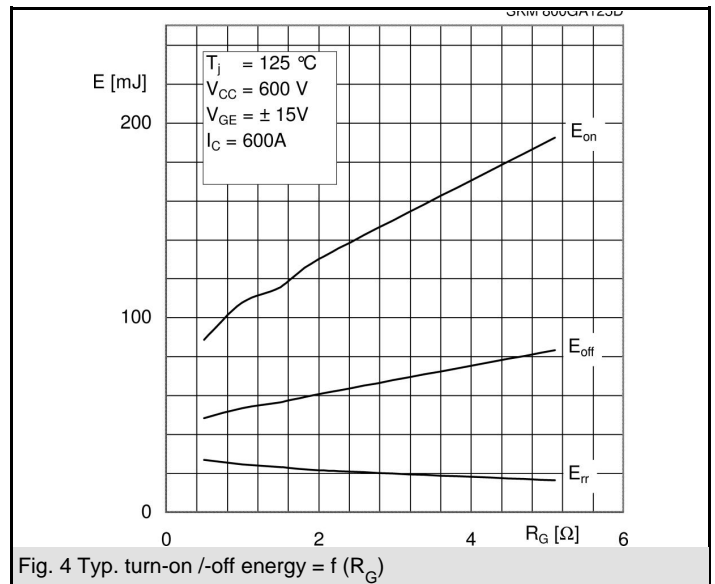
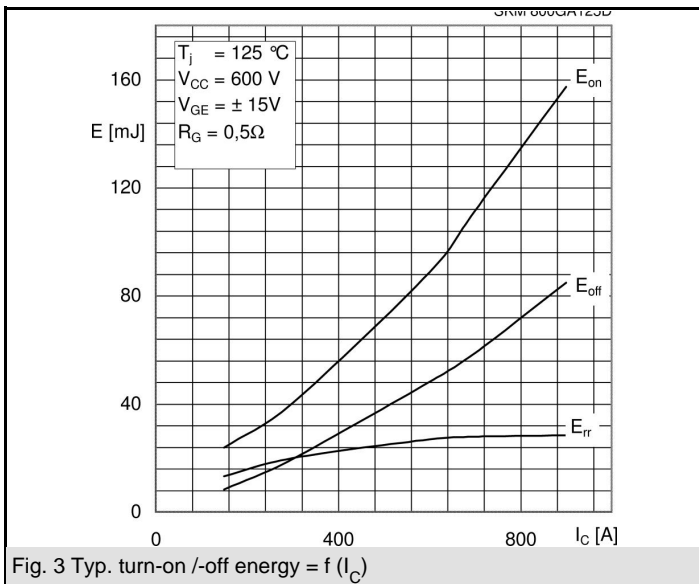
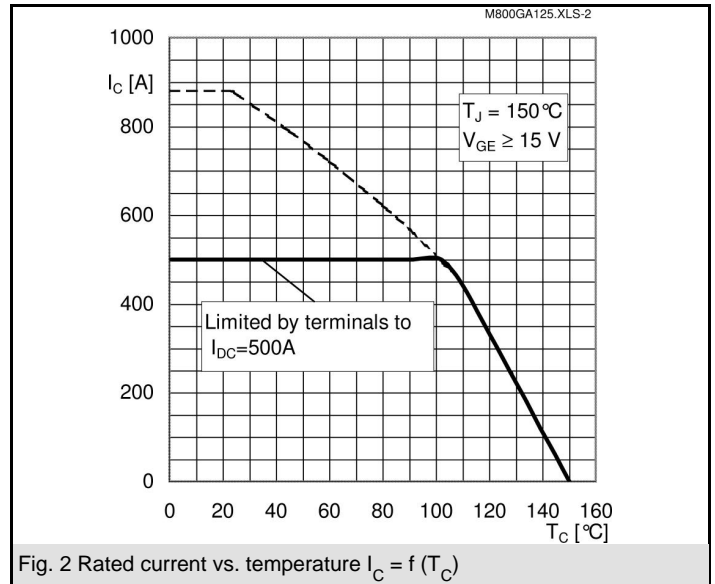
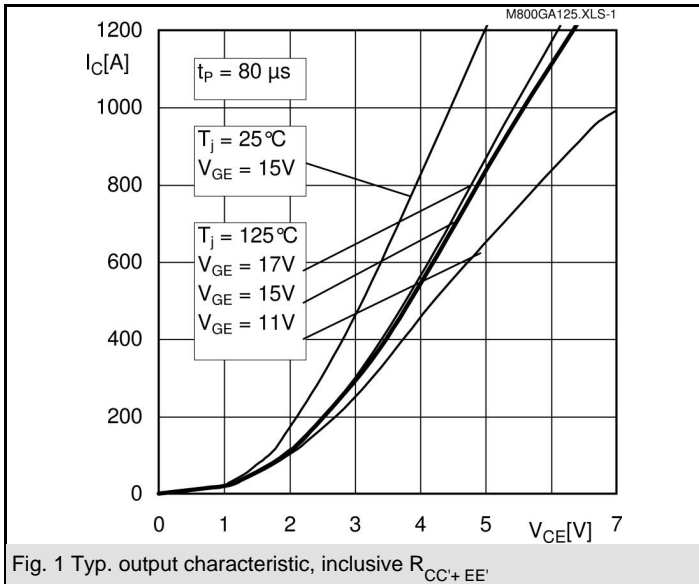
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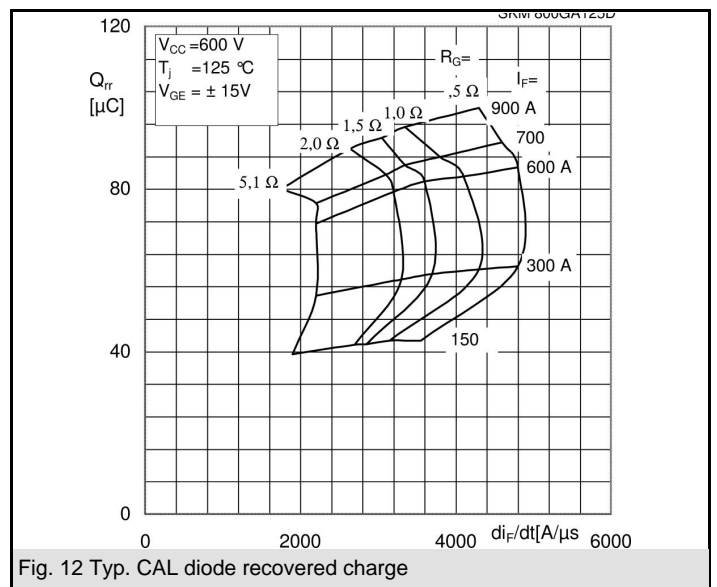
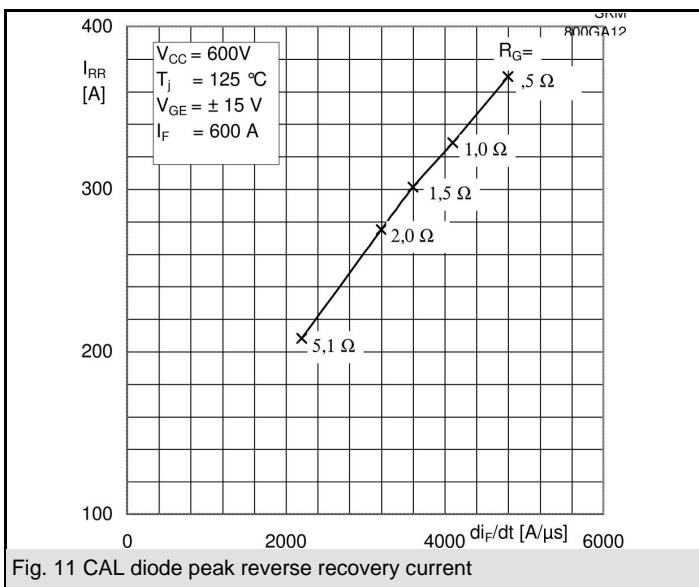
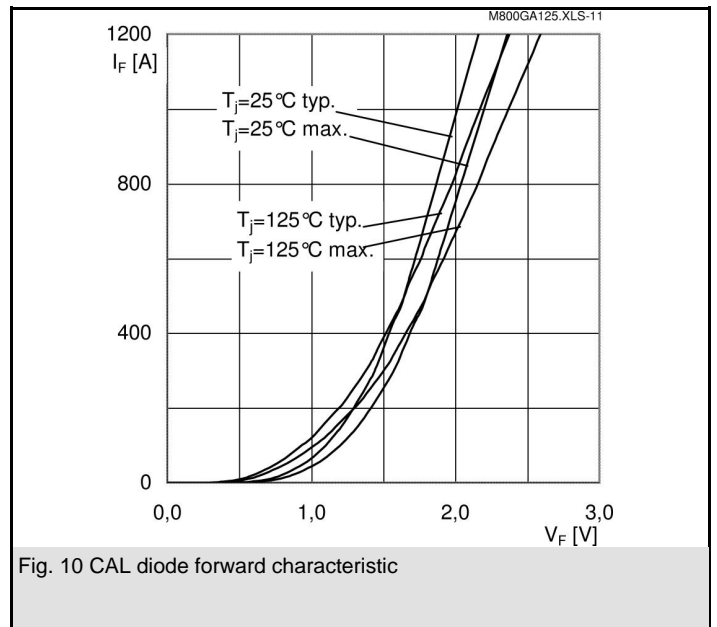
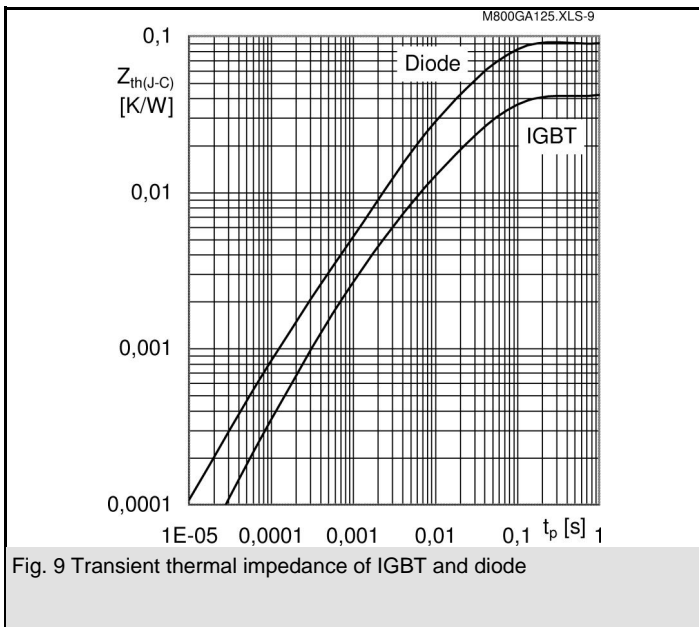
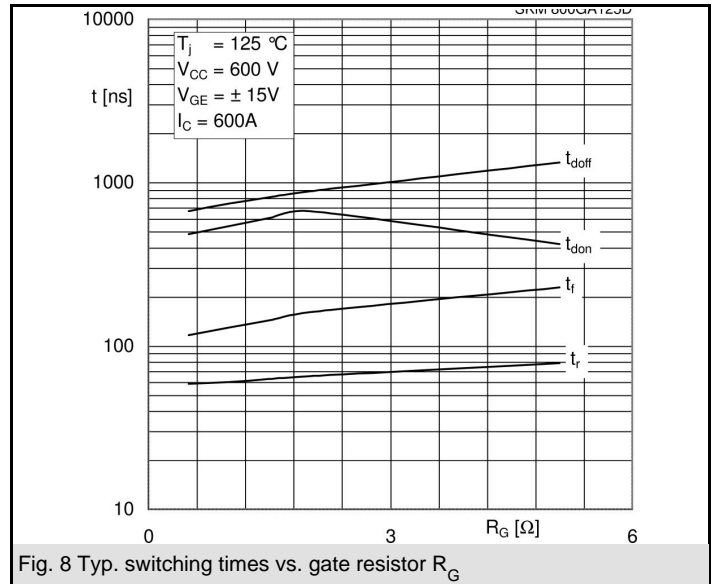
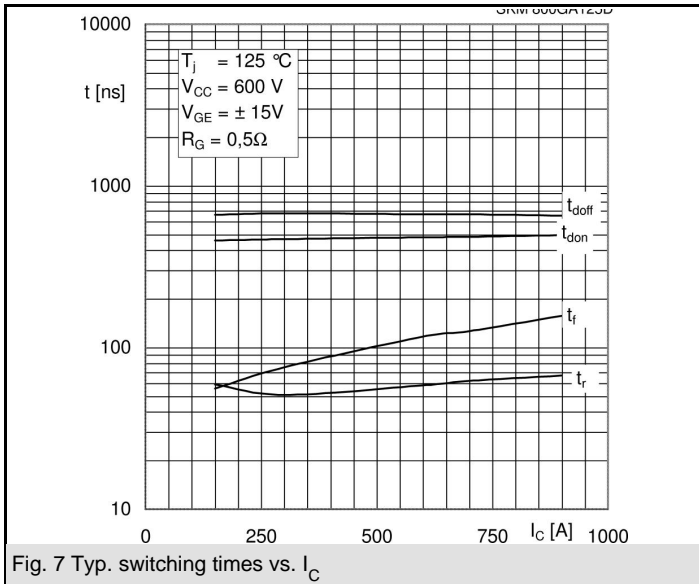
### Characteristics

Symbol	Conditions	min.	typ.	max.	Units	
$V_F = V_{EC}$	$I_{Fnom} = 600$ A; $V_{GE} = 0$ V		$T_j = 25$ °C <sub>chiplev.</sub>	2,3	2,5	V
			$T_j = 125$ °C <sub>chiplev.</sub>	2,1	2,3	V
$V_{F0}$			$T_j = 25$ °C	1,1	1,3	V
			$T_j = 125$ °C	0,9	1,05	V
$r_F$			$T_j = 25$ °C	2	2	mΩ
			$T_j = 125$ °C	2	2,1	mΩ
$I_{RRM}$	$I_F = 600$ A		$T_j = 25$ °C	370	A	
$Q_{rr}$				83	μC	
$E_{rr}$	$V_{GE} = 0$ V; $V_{CC} = 600$ V			28	mJ	
$R_{th(j-c)D}$	per diode			0,07	K/W	
<b>Module</b>						
$L_{CE}$				20	nH	
$R_{CC+EE}$	res., terminal-chip		$T_{case} = 25$ °C	0,18	mΩ	
			$T_{case} = 125$ °C	0,22	mΩ	
$R_{th(c-s)}$	per module			0,038	K/W	
$M_s$	to heat sink M6			3	5	Nm
$M_t$	to terminals M6(M4)			2,5 (1,1)	5 (2)	Nm
w					330	g

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.



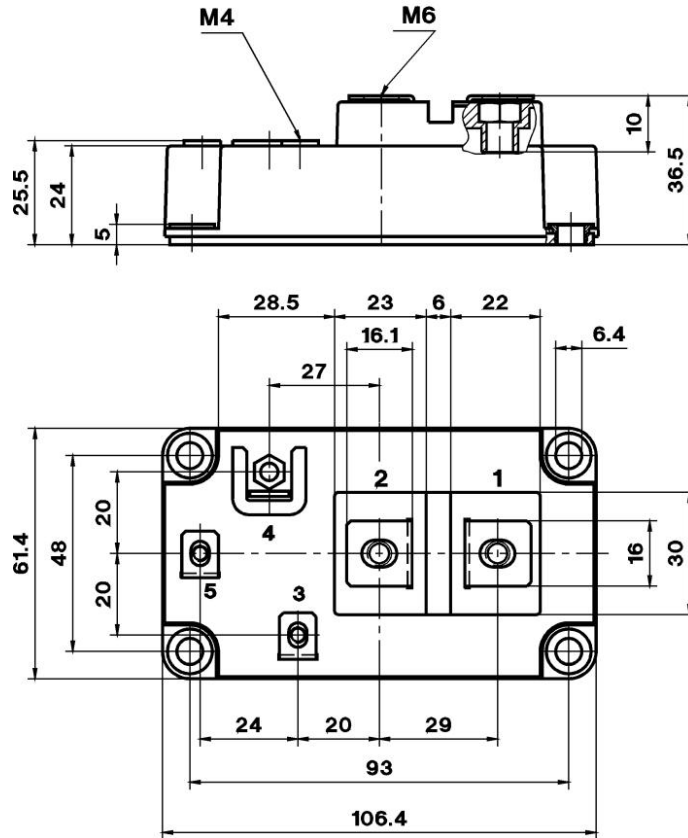


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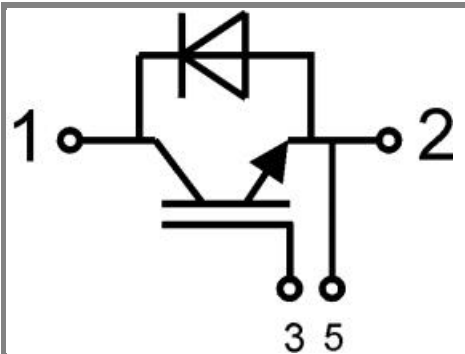
UL Recognized

CASED59

File no. E 63 532



Case D 59



Case D 59

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