Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

IGBT Module
Sixpack
Short Circuit SOA Capability
Square RBSOA
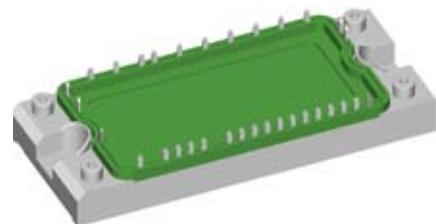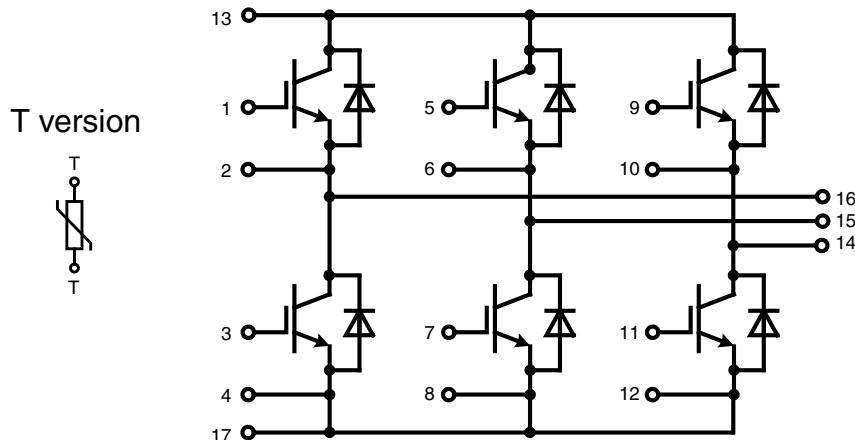
I_{C25} = 50 A
V_{CES} = 1200 V
$V_{CE(sat) typ.}$ = 2.2 V

Part name (Marking on product)

MWI25-12A7
MWI25-12A7T

T version

$\boxed{\text{UL}}$ E72873

Pin configuration see outlines.

Features:
- NPT IGBT technology
- low saturation voltage
- positive temperature coefficient for easy paralleling
- low switching losses
- switching frequency up to 30 kHz
- square RBSOA, no latch up
- high short circuit capability
- MOS input, voltage controlled
- ultra fast free wheeling diodes
- solderable pins for PCB mounting
- space savings
- reduced protection circuits

Application:
- AC motor control
- AC servo and robot drives power supplies

Package:
- UL registered
- Industry standard E2-pack
- package with copper base plate
- package designed for wave soldering

IXYS reserves the right to change limits, test conditions and dimensions.

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MWI 25-12A7(T)

IGBTs

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
V_{CES}	collector emitter voltage	T_{VJ} = 25°C to 150°C				1200	V
V_{GES}	max. DC gate voltage	continuous				±20	V
V_{GEM}	max. transient collector gate voltage	transient				±30	V
I_{C25}	collector current	T_C = 25°C				50	A
I_{C80}		T_C = 80°C				35	A
P_{tot}	total power dissipation	T_C = 25°C				225	W
$V_{CE(sat)}$	collector emitter saturation voltage	I_C = 25 A; V_{GE} = 15 V	T_{VJ} = 25°C		2.2	2.7	V
			T_{VJ} = 125°C		2.6		V
$V_{GE(th)}$	gate emitter threshold voltage	I_C = 1 mA; V_{GE} = V_{CE}	T_{VJ} = 25°C	4.5		6.5	V
I_{CES}	collector emitter leakage current	V_{CE} = V_{CES}; V_{GE} = 0 V	T_{VJ} = 25°C			2	mA
			T_{VJ} = 125°C		2		mA
I_{GES}	gate emitter leakage current	V_{CE} = 0 V; V_{GE} = ±20 V				200	nA
C_{ies}	input capacitance	V_{CE} = 25 V; V_{GE} = 0 V; f = 1 MHz			1650		pF
$Q_{G(on)}$	total gate charge	V_{CE} = 600 V; V_{GE} = 15 V; I_C = 35 A			120		nC
$t_{d(on)}$	turn-on delay time				100		ns
t_r	current rise time				70		ns
$t_{d(off)}$	turn-off delay time	inductive load	T_{VJ} = 125°C		500		ns
t_f	current fall time	V_{CE} = 600 V; I_C = 25 A			70		ns
E_{on}	turn-on energy per pulse	V_{GE} = ±15 V; R_G = 47 Ω			3.8		mJ
E_{off}	turn-off energy per pulse				2.8		mJ
I_{CM}	reverse bias safe operating area	RBSOA; V_{GE} = ±15 V; R_G = 47 Ω			70		A
		L = 100 µH; clamped induct. load	T_{VJ} = 125°C				
		V_{CEmax} = V_{CES} - L_S·di/dt					
t_{SC} (SCSOA)	short circuit safe operating area	V_{CE} = V_{CES}; V_{GE} = ±15 V; R_G = 47 Ω; non-repetitive	T_{VJ} = 125°C		10		µs
R_{thJC}	thermal resistance junction to case	(per IGBT)				0.55	K/W

Diodes

Symbol	Definitions	Conditions		min.	typ.	max.	Unit
V_{RRM}	max. repetitve reverse voltage	T_{VJ} = 150°C				1200	V
I_{F25}	forward current	T_C = 25°C				50	A
I_{F80}		T_C = 80°C				33	A
V_F	forward voltage	I_F = 25 A; V_{GE} = 0 V	T_{VJ} = 25°C		2.3	2.7	V
			T_{VJ} = 125°C		1.7		V
I_{RM}	max. reverse recovery current	V_R = 600 V			20		A
t_{rr}	reverse recovery time	di$_F$/dt = -400 A/µs	T_{VJ} = 125°C		200		ns
$E_{rec(off)}$	reverse recovery energy	I_F = 25 A; V_{GE} = 0 V			1.3		mJ
R_{thJC}	thermal resistance junction to case	(per diode)				1.19	K/W
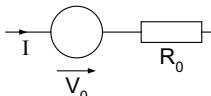
T_C = 25°C unless otherwise stated

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Module

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
T_{VJ}	operating temperature		-40		125	°C
T_{VJM}	max. virtual junction temperature				150	°C
T_{stg}	storage temperature		-40		125	°C
V_{ISOL}	isolation voltage	$I_{ISOL} \le 1$ mA; 50/60 Hz			2500	V~
M_d	mounting torque	(M4)	2.7		3.3	Nm
d_S	creep distance on surface		6			mm
d_A	strike distance through air		6			mm
Weight				180		g
R_{thCH}	thermal resistance case to heatsink	with heatsink compound		0.02		K/W

Temperature Sensor NTC

Symbol	Definitions	Conditions	min.	typ.	max.	Unit
R_{25}	resistance	$T_C = 25°C$	4.75	5.0	5.25	kΩ
$B_{25/50}$				3375		K

Equivalent Circuits for Simulation
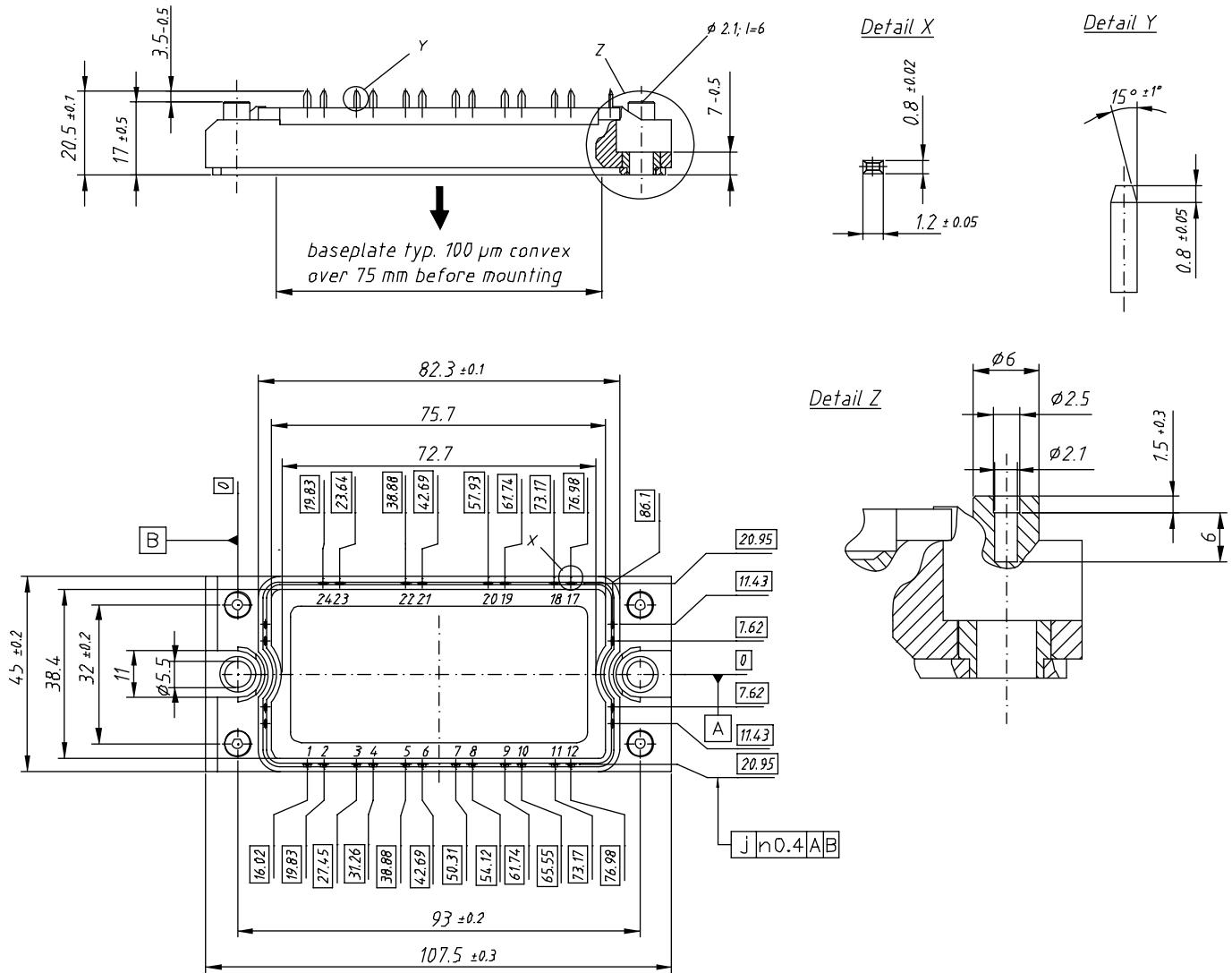
Symbol	Definitions	Conditions		min.	typ.	max.	Unit
V_0	IGBT	T1 - T6	$T_{VJ} = 125°C$		1.5		V
R_0					40.7		mΩ
V_0	Diode	D1 - D6	$T_{VJ} = 125°C$		1.3		V
R_0					16		mΩ

$$Zth(t) = \sum_{i=1}^{n}\left[R_i \cdot \left(1 - \exp\left(-\frac{t}{\tau_i}\right)\right)\right]$$

$$\tau_i = R_i \cdot C_i$$

	IGBT	Diode
R_1	-	-
R_2	-	-
C_1	-	-
C_2	-	-

IXYS reserves the right to change limits, test conditions and dimensions.

Outline Drawing | Dimensions in mm (1 mm = 0.0394")

baseplate typ. 100 μm convex over 75 mm before mounting

Detail X

Detail Y

Detail Z

Product Marking

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MWI 15-12A7	MWI15-12A7	Box	10	482730
Standard	MWI 15-12A7T	MWI15-12A7T	Box	10	480819

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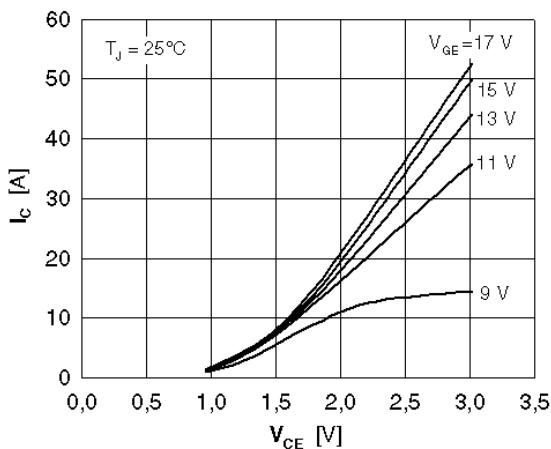
Fig. 1   Typ. output characteristics
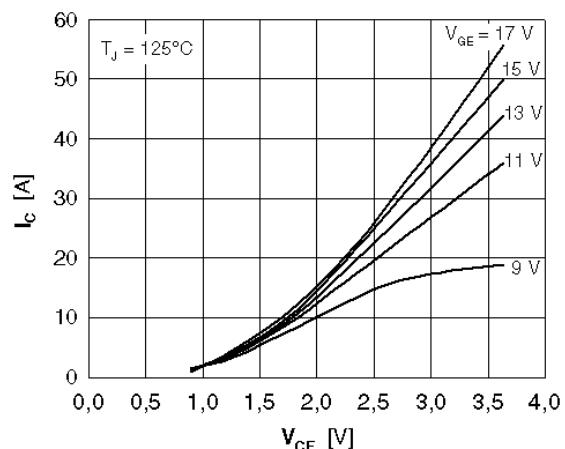
Fig. 2   Typ. output characteristics
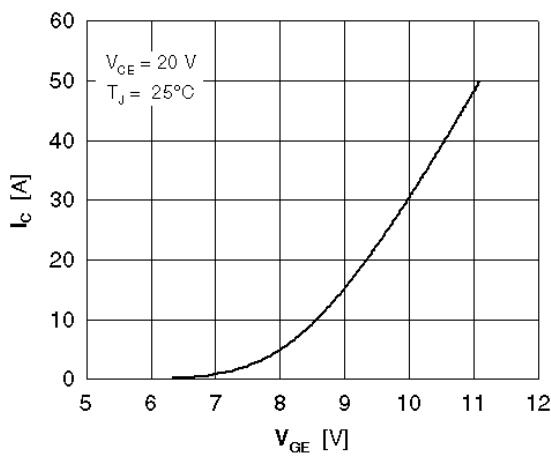
Fig. 3   Typ. transfer characteristics
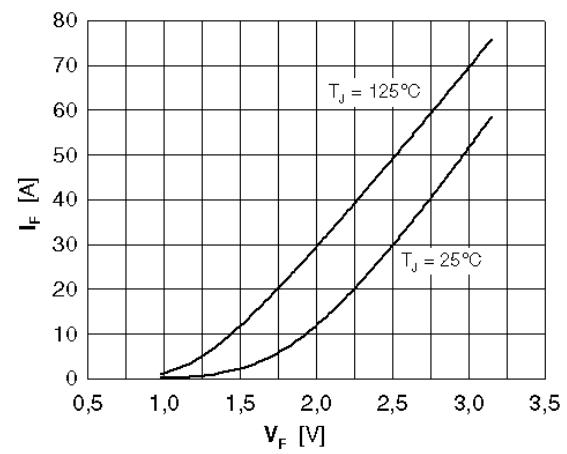
Fig. 4   Typ. forward characteristics of free wheeling diode
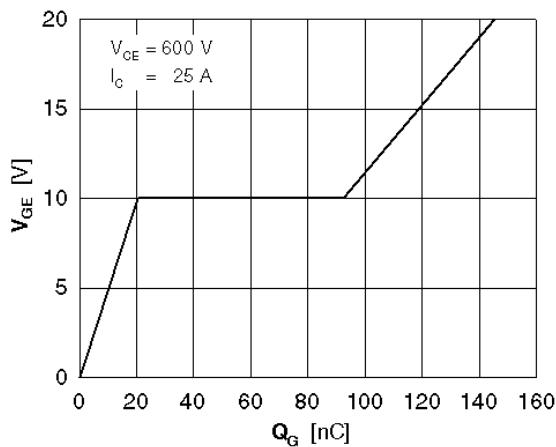
Fig. 5   Typ. turn on gate charge
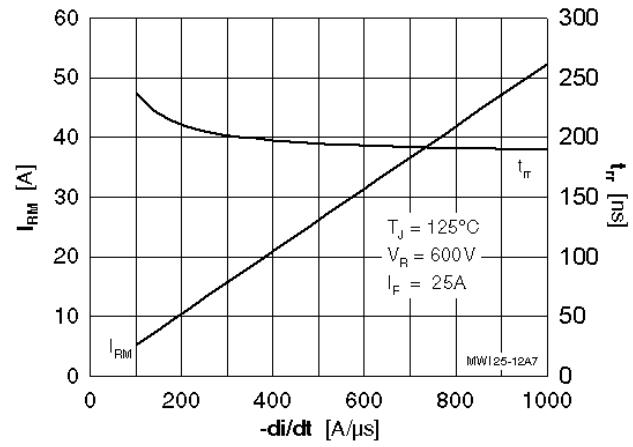
Fig. 6   Typ. turn off characteristics of free wheeling diode

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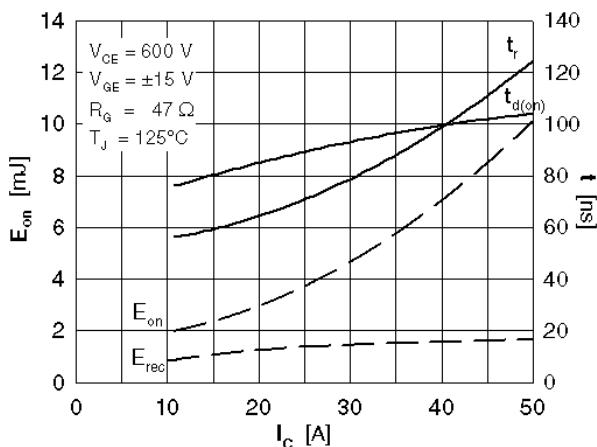
Fig. 7   Typ. turn on energy and switching times versus collector current
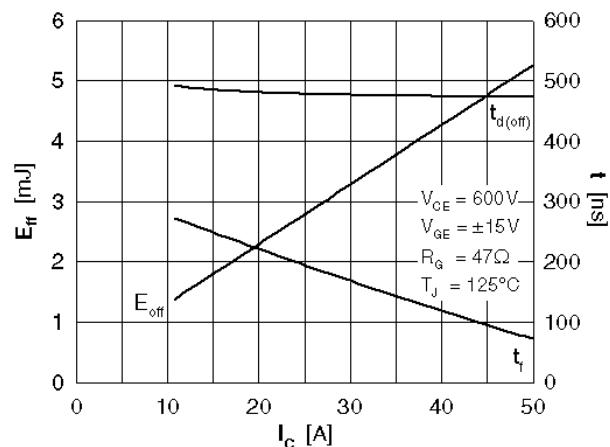
Fig. 8   Typ. turn off energy and switching times versus collector current
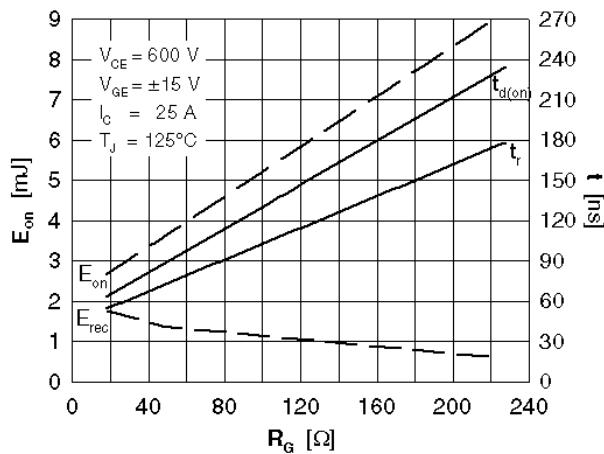

Fig. 9   Typ. turn on energy and switching times versus gate resistor
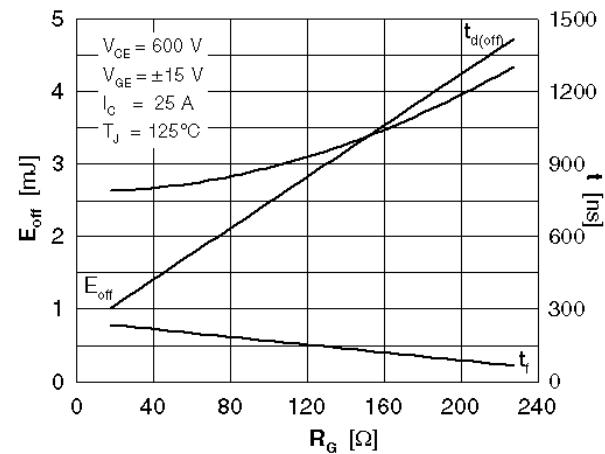

Fig.10   Typ. turn off energy and switching times versus gate resistor
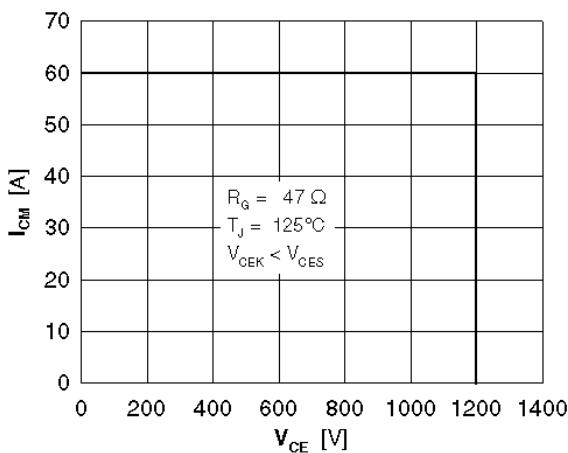
Fig. 11   Reverse biased safe operating area
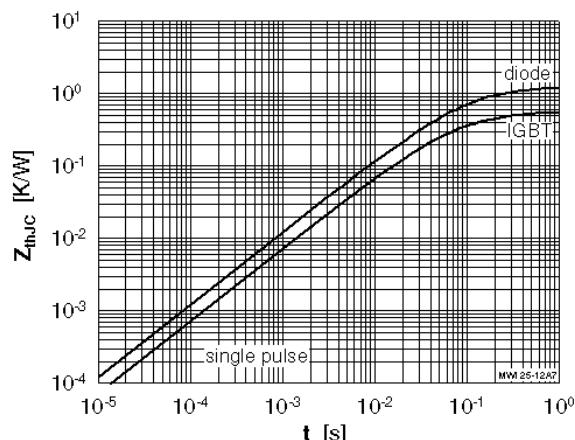
Fig. 12   Typ. transient thermal impedance

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