

Features

- Low On-Resistance
- Fast Switching Speed
- 100% avalanche tested
- Lead Free and Green Devices
Available (RoHS Compliant)



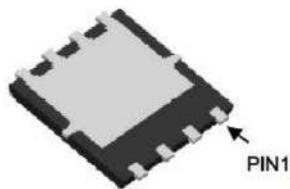
Product Summary

V_{DSS}	40	V
$R_{DS(ON)-Typ@V_{GS}=10V}$	3.5	m Ω
I_D	80	A

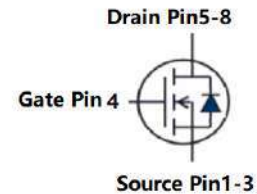
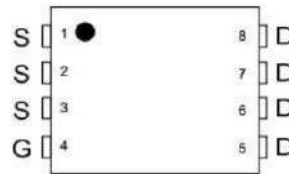
Application

- DC/DC Converters
- On board power for server
- Synchronous rectification

Top View



DFN5*6-8



N-Channel

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		40	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	80	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	320	A
I _D ^②	Continuous Drain Current@T _C (V _{GS} =10V)	T _C =25°C	80	A
		T _C =100°C	51	
	Continuous Drain Current@T _A (V _{GS} =10V) ^③	T _A =25°C	25	
		T _A =70°C	19	
P _D	Maximum Power Dissipation@T _C	T _C =25°C	65	W
		T _C =100°C	26	
	Maximum Power Dissipation@T _A ^③	T _A =25°C	4.2	
		T _A =70°C	2.7	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.92	°C/W
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	30	°C/W
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	121	mJ

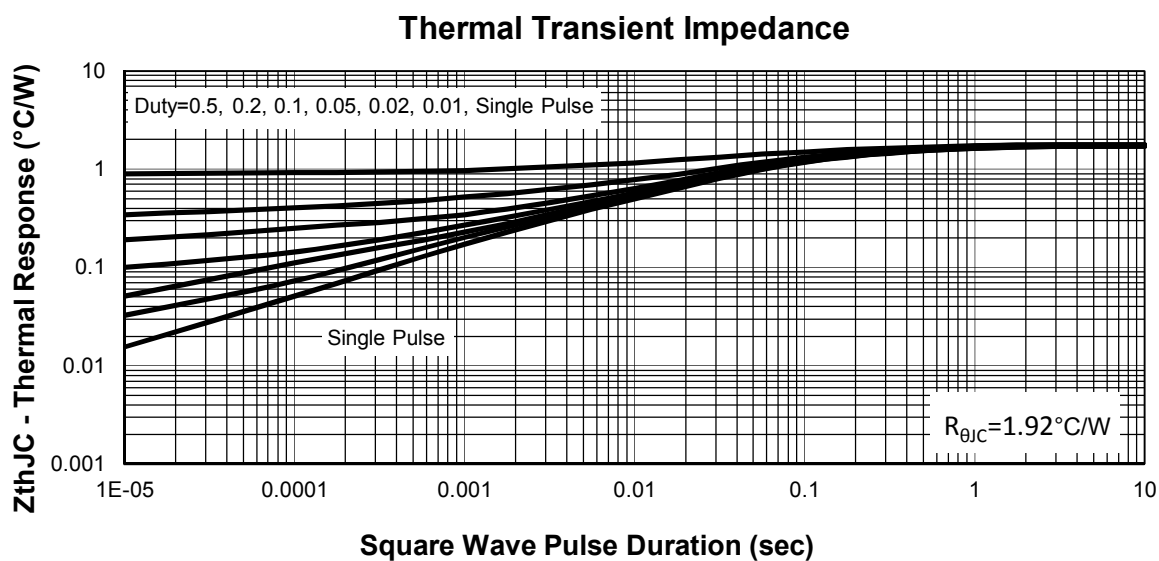
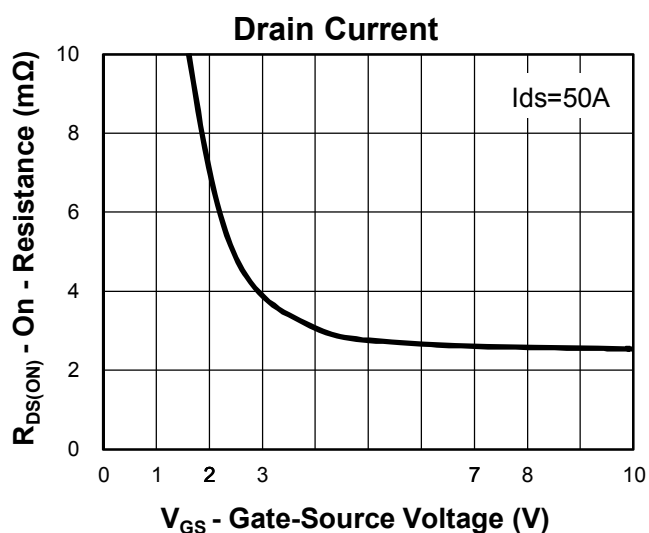
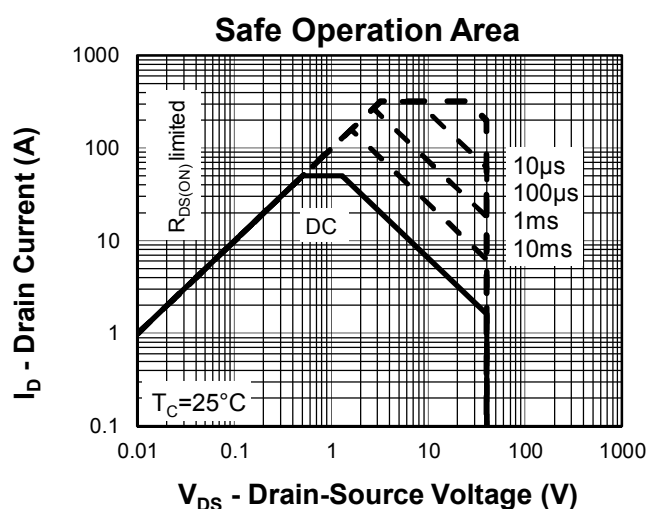
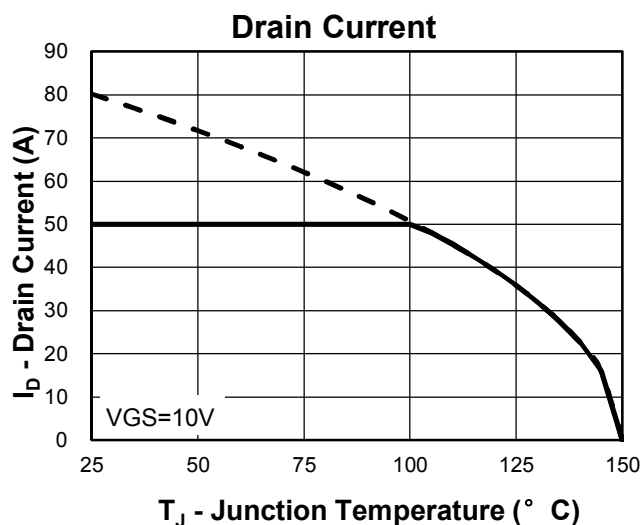
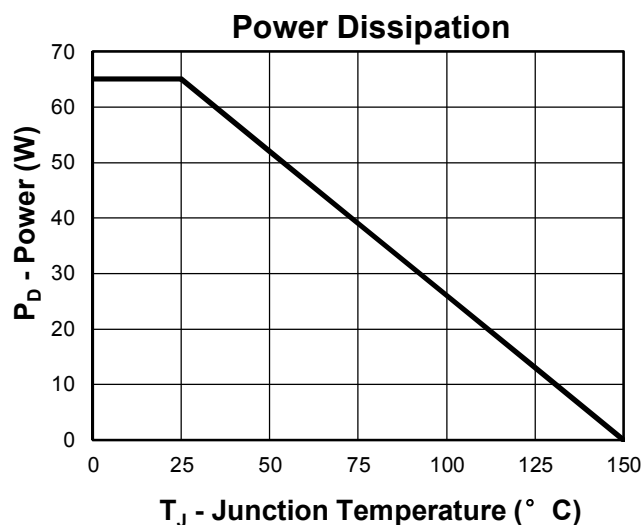
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	LIMIT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1		2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =35A		4.5	5.5	mΩ
		V _{GS} =10V, I _{DS} =50A		3.5	4.5	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =50A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =50A, dI _{SD} /dt=100A/μs		18		ns
Q _{rr}	Reverse Recovery Charge			29		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		1.3		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz		1560		pF
C _{oss}	Output Capacitance			780		
C _{rss}	Reverse Transfer Capacitance			80		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V,I _{DS} =50A, V _{GEN} =10V,R _G =4.7Ω		13		ns
t _r	Turn-on Rise Time			21		
t _{d(OFF)}	Turn-off Delay Time			29		
t _f	Turn-off Fall Time			9		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =32V, V _{GS} =10V, I _{DS} =50A		29		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			9		

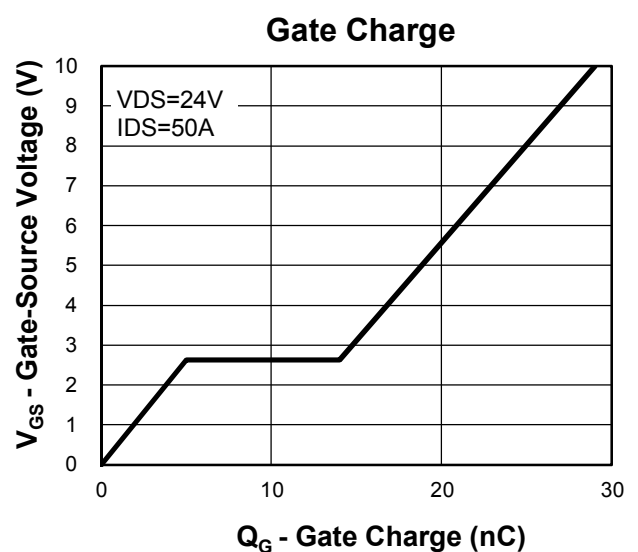
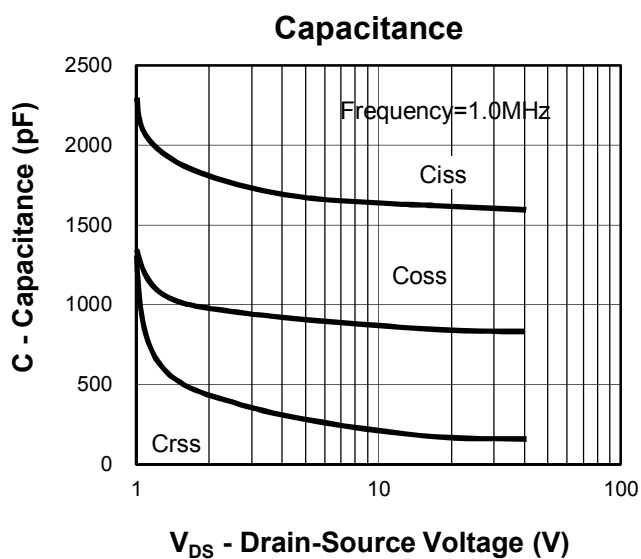
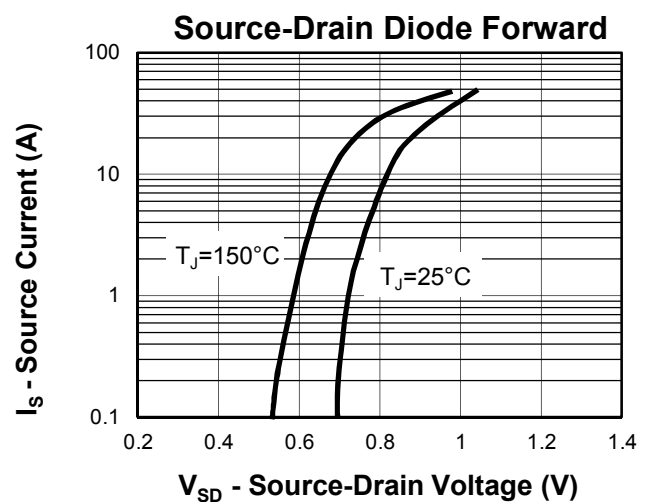
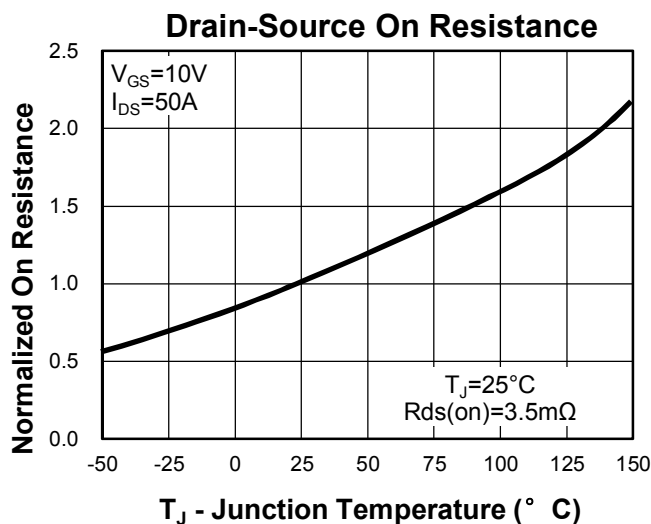
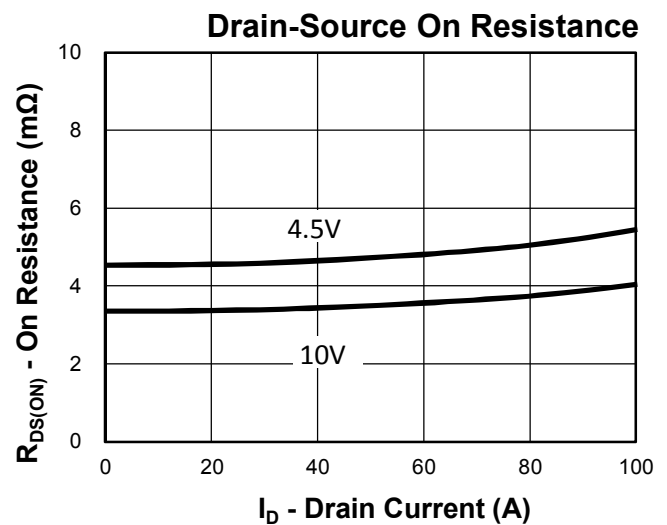
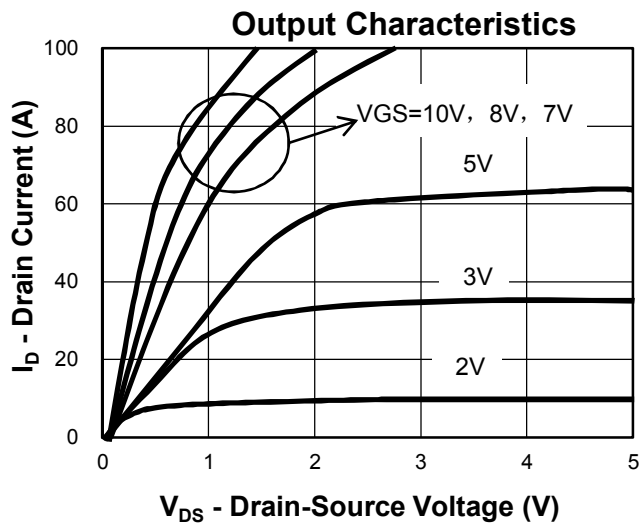
Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature.
The package limitation current is 50A.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by $T_{J\text{max}}$, $I_{AS} = 22\text{A}$, $V_{DD} = 24\text{V}$, $R_G = 50\Omega$, Starting $T_J = 25^\circ\text{C}$.
- ⑤Pulse test;Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- ⑥Guaranteed by design, not subject to production testing.

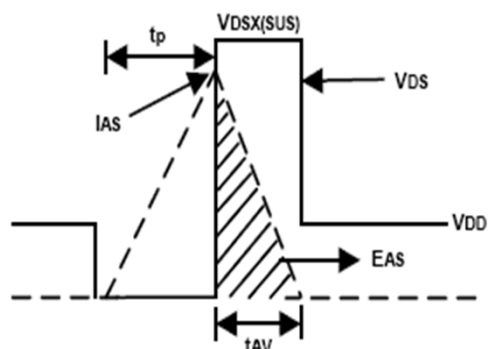
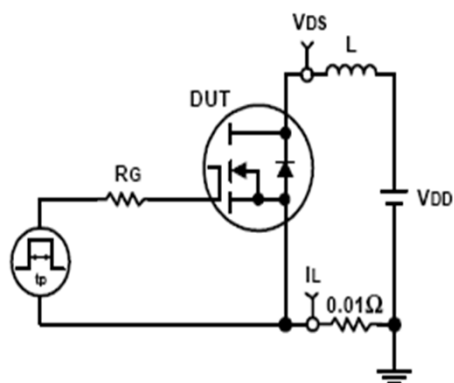
Typical Characteristics



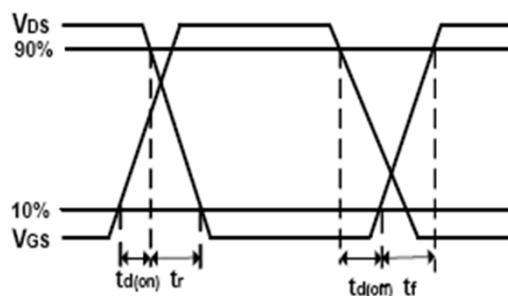
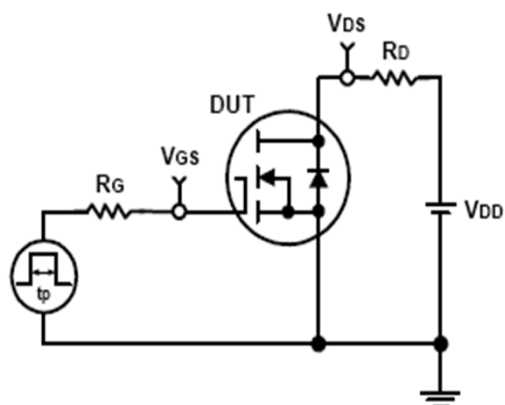
Typical Characteristics



Avalanche Test Circuit and Waveforms

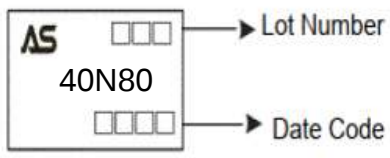


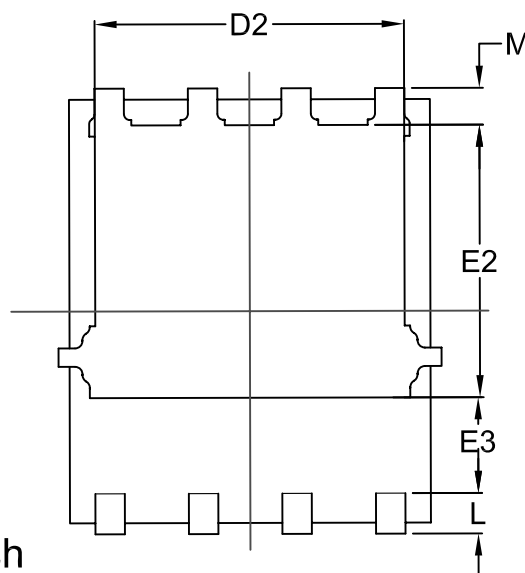
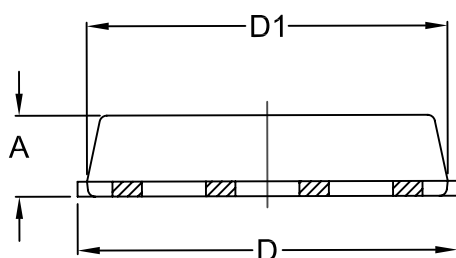
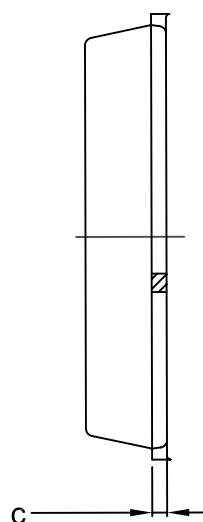
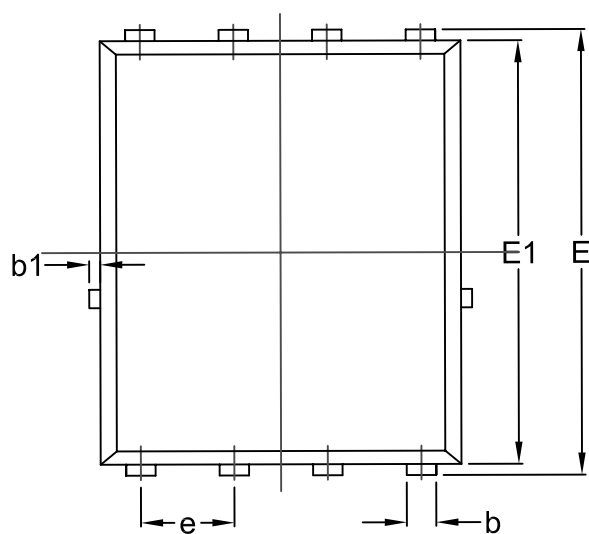
Switching Time Test Circuit and Waveforms



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N80Q-R	40N80	DFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
DFN5*6-8	


Notes:

1.Dimension $D1$, $E1$ not included mold flash

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	1.00	1.10	1.20
b	0.30	0.40	0.50
b1	0.02	0.15	0.22
c	0.15	0.20	0.35
D	4.95	5.15	5.35
D1	4.80	4.90	5.00
D2	4.00	4.20	4.40
E	5.95	6.05	6.25
E1	5.65	5.75	5.85
E2	3.50	3.70	3.90
E3	1.10	/	/
e	1.27		
L	0.40	0.55	0.70
M	0.35	0.50	0.65

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