Ordering number : EN6559C

5LN01SP

N-Channel Small Signal MOSFET
50V, 0.1A, 7.8Ω, Single SPA

ON Semiconductor®
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Features

- Low ON-resistance
- Ultrahigh-speed switching
- 1.5V drive

Specifications

Absolute Maximum Ratings at Ta=25°C

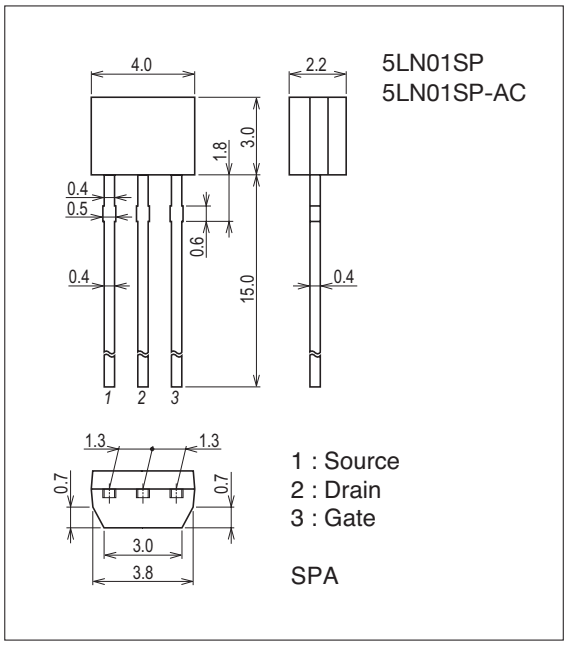
Parameter	Symbol	Conditions	Value	Unit
Drain to Source Voltage	V_{DSS}		50	V
Gate to Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		0.1	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	0.4	A
Power Dissipation	P_D		0.25	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

This product is designed to "ESD immunity < 200V*", so please take care when handling.
* Machine Model

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

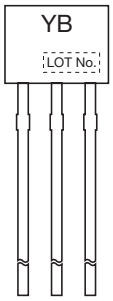
unit : mm (typ)
7524-007



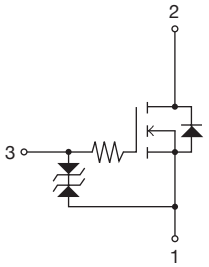
Ordering & Package Information

Device	Package	Shipping	memo
5LN01SP	SPA SC-72	500pcs./bag	Pb-Free
5LN01SP-AC	SPA SC-72	2,500pcs./box	

Marking



Electrical Connection

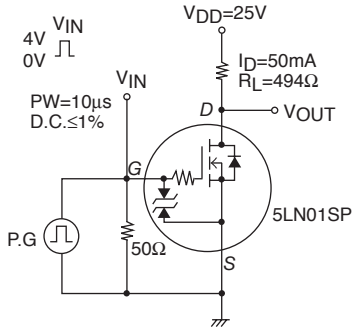


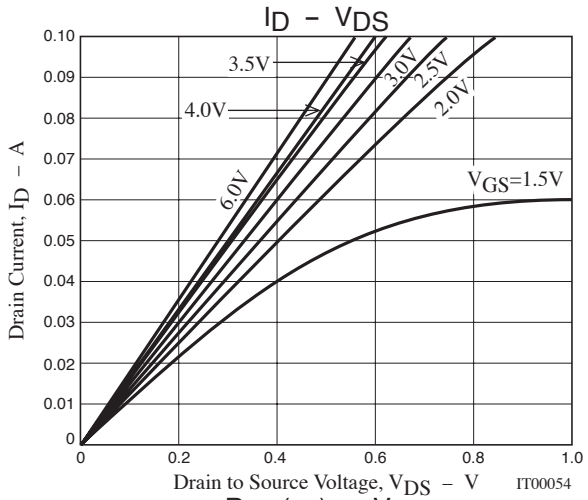
Electrical Characteristics at Ta=25°C

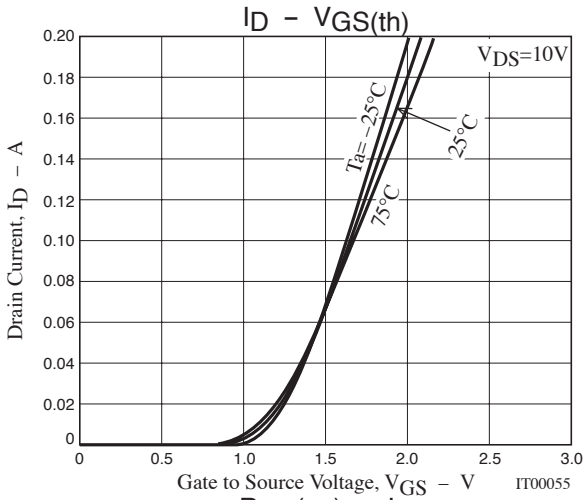
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	50			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=50V, V_{GS}=0V			10	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=100μA	0.4		1.3	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=50mA	0.13	0.18		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=50mA, V_{GS}=4V		6	7.8	Ω
	$R_{DS}(on)2$	I_D=30mA, V_{GS}=2.5V		7.1	9.9	Ω
	$R_{DS}(on)3$	I_D=10mA, V_{GS}=1.5V		10	20	Ω
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		6.6		pF
Output Capacitance	Coss			4.7		pF
Reverse Transfer Capacitance	Crss			1.7		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		18		ns
Rise Time	t_r			42		ns
Turn-OFF Delay Time	$t_d(off)$			190		ns
Fall Time	t_f			105		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=100mA		1.57		nC
Gate to Source Charge	Qgs			0.20		nC
Gate to Drain “Miller” Charge	Qgd			0.32		nC
Forward Diode Voltage	V_{SD}	I_S=100mA, V_{GS}=0V		0.85	1.2	V

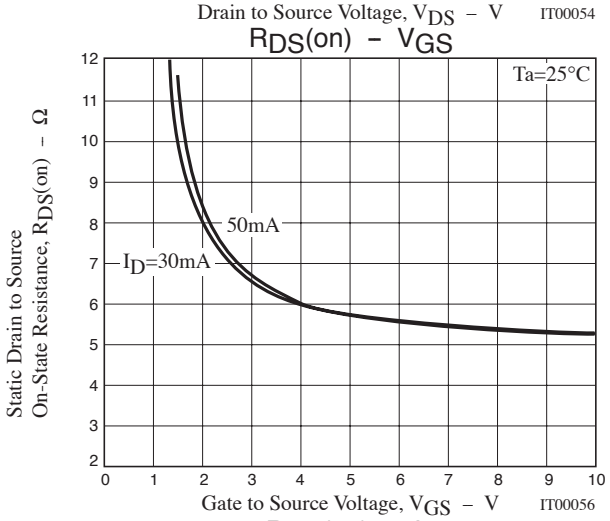
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

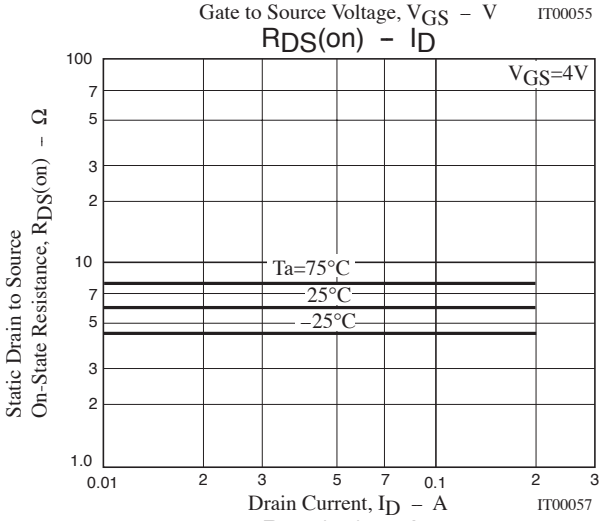
Switching Time Test Circuit

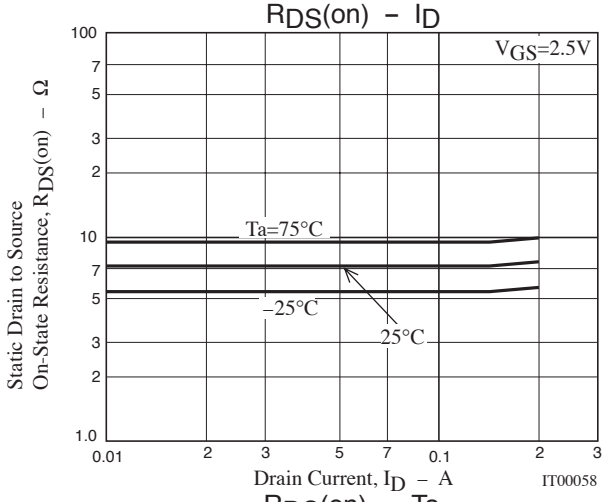


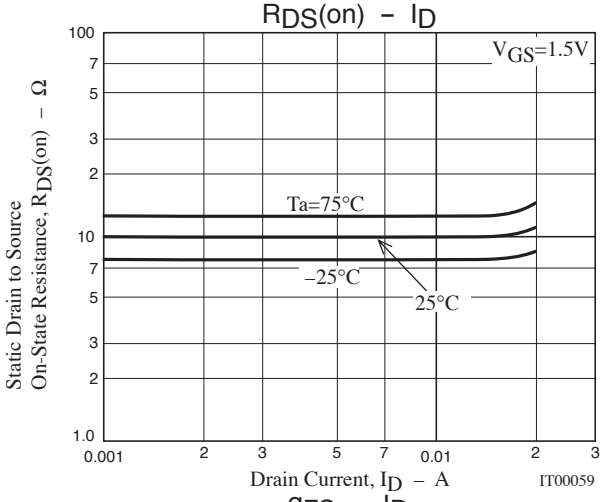

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
3.5V
4.0V
3.0V
2.5V
2.0V
6.0V
VGS=1.5V
IT00054

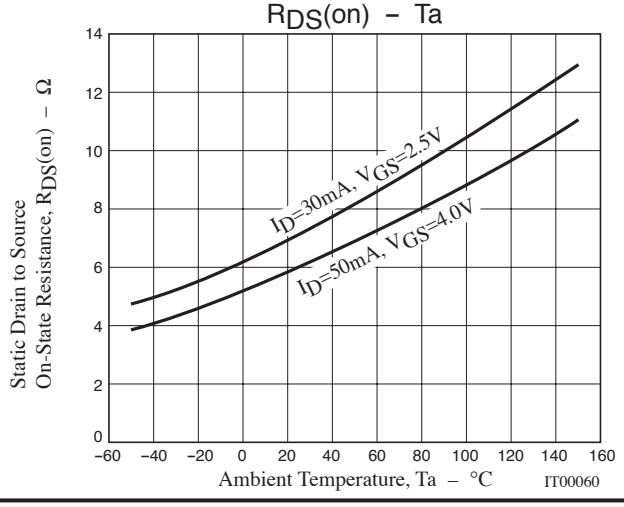

ID – VGS(th)
Drain Current, ID – A
Gate to Source Voltage, VGS – V
VDS=10V
Ta=–25°C
25°C
75°C
IT00055

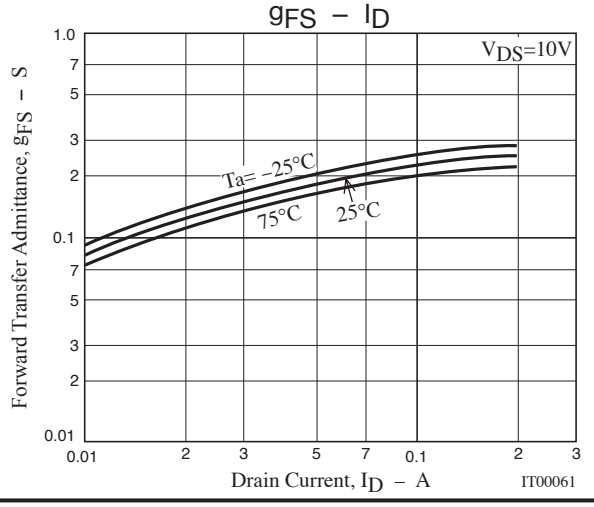

RDS(on) – VGS
Static Drain to Source On-State Resistance, RDS(on) – Ω
Gate to Source Voltage, VGS – V
Ta=25°C
50mA
ID=30mA
IT00056

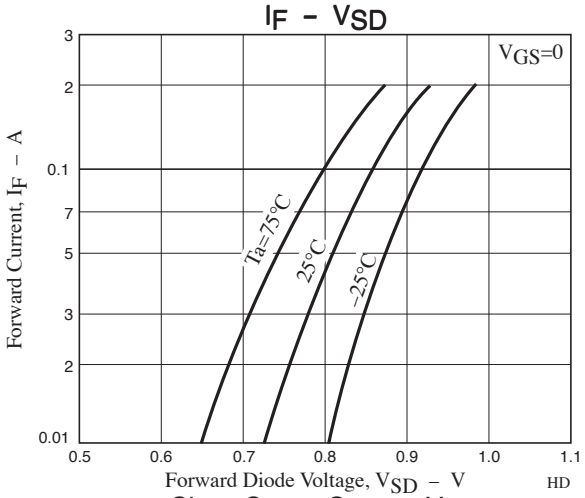

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
VGS=4V
Ta=75°C
25°C
–25°C
IT00057

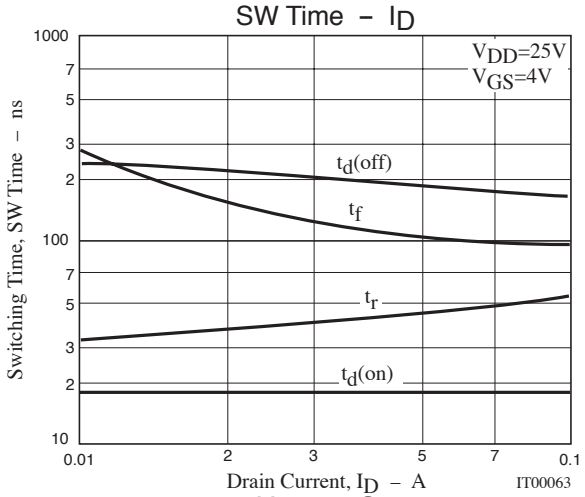

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
VGS=2.5V
Ta=75°C
–25°C
25°C
IT00058

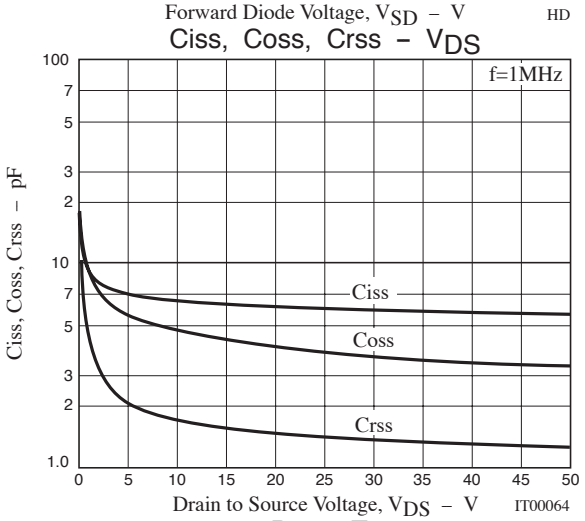

RDS(on) – ID
Static Drain to Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
VGS=1.5V
Ta=75°C
–25°C
25°C
IT00059

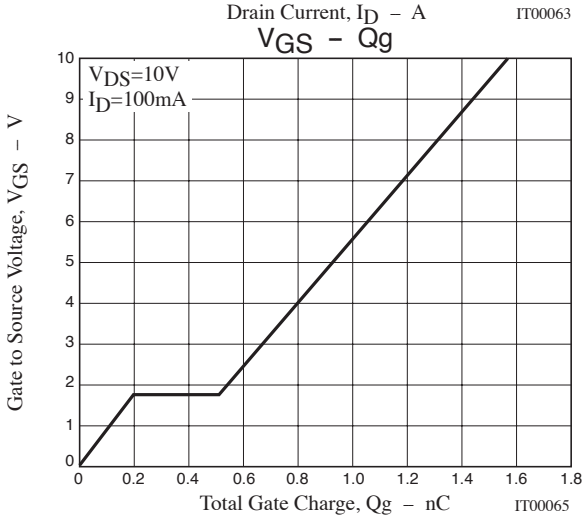

RDS(on) – Ta
Static Drain to Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
ID=30mA, VGS=2.5V
ID=50mA, VGS=4.0V
IT00060

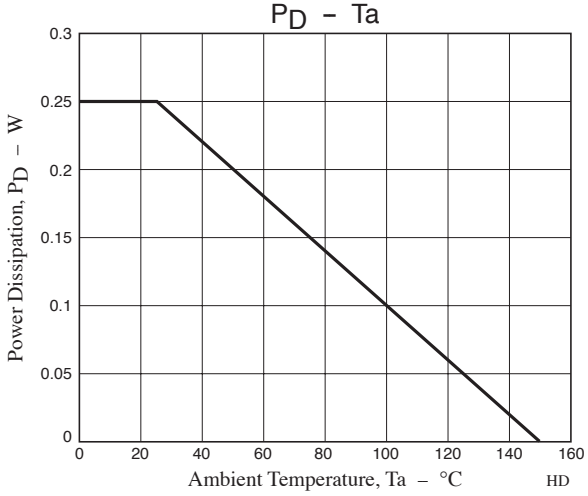

gFS – ID
Forward Transfer Admittance, gFS – S
Drain Current, ID – A
VDS=10V
Ta=–25°C
75°C
25°C
IT00061


IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Forward Diode Voltage, VSD – V
HD


SW Time – ID
VDD=25V
VGS=4V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00063

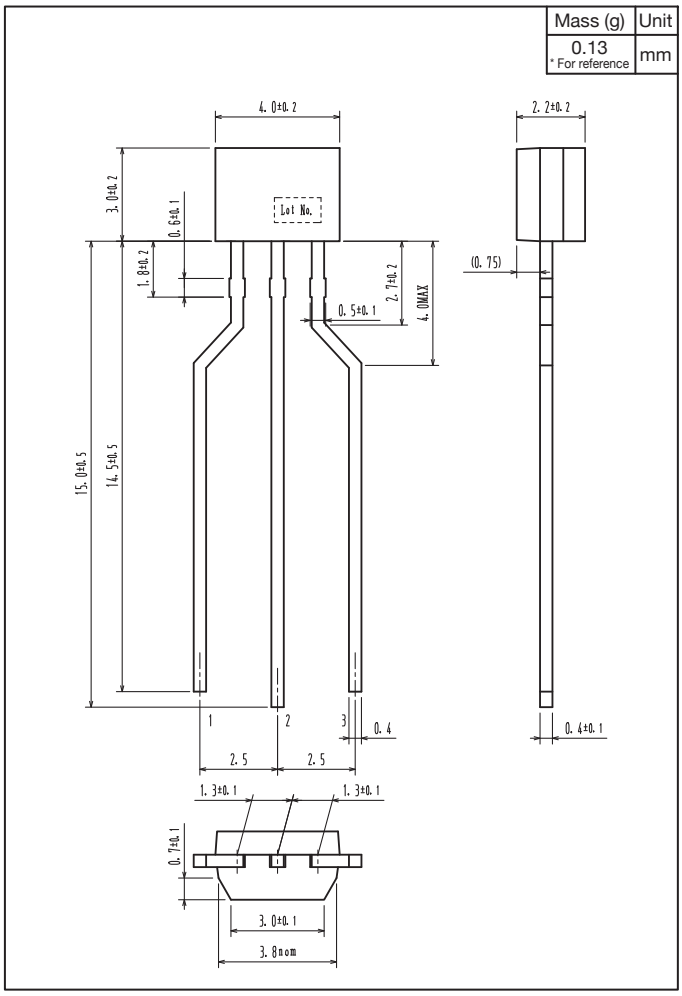

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT00064


VGS – Qg
VDS=10V
ID=100mA
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00065


PD – Ta
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
HD

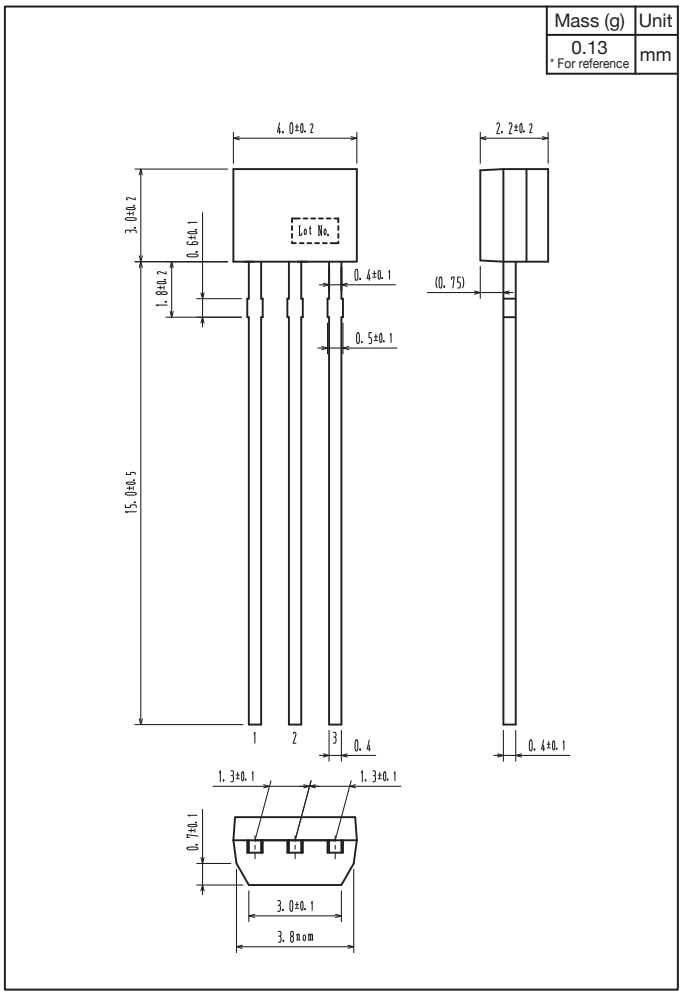
Outline Drawing

5LN01SP-AC



Outline Drawing

5LN01SP



Note on usage : Since the 5LN01SP is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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