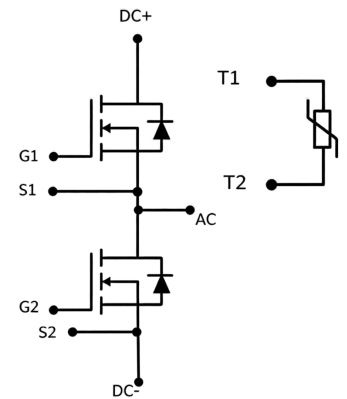


Easy2B Half Bridge SiC Module

Parameter	Value	Unit
V_{DS}	1200	V
I_D	160	A
$R_{DS(ON)}$	9	m Ω
Q_G	625	nC



Features:

- High Current Density
- Low Inductive Design
- Low Switching Losses
- High-Frequency Operation

Applications:

- DC/DC Converter
- Motor Drives
- Servo Drives
- UPS Systems
- High Frequency Switching

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-source Voltage	1200	V
V_{GS}	Gate-source Voltage (dynamic)	-10/+22	V
I_D	Drain Current (continuous)($T_C=25^\circ\text{C}$)	235	A
I_D	Drain Current (continuous)($T_C=100^\circ\text{C}$)	160	A
I_{DM}	Drain Current (pulsed)	500	A
$T_{op}; T_{stg}$	Operating and Storage Temperature Range	-40 to +150	$^\circ\text{C}$
$R_{th(j-c)}$	Thermal Resistance, Junction-to-heatsink	0.13	$^\circ\text{C}/\text{W}$
L_{Stray}	Stray Inductance	10	nH
V_{isol}	Isolation Test Voltage (f=50Hz; t=1min)	3.0	kV
M	Mounting Force Per Clamp	40 - 80	N
W	Weight	39	g

MOSFET Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Static characteristics (at $T_C=25^\circ\text{C}$ unless otherwise specified)						
B_{VDS}	Drain-source Breakdown Voltage	1200	-	-	V	$V_{GS}=0\text{V}$
I_{DSS}	Zero Gate Voltage Drain Current	-	-	50	μA	$V_{DS}=1200\text{V}; V_{GS}=0\text{V}$
I_{GSS}	Gate-body Leakage Current	-	-	2.5	μA	$V_{GS}=-10/20\text{V}; V_{DS}=0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	2.0	-	4.0	V	$V_{DS}=V_{GS}; I_D=50\text{mA}$
$R_{DS(on)}$	Static Drain-source on Resistance	-	9	11	m Ω	$V_{GS}=18\text{V}; I_D=120\text{A}$
		-	16.2	-	m Ω	$V_{GS}=18\text{V}; I_D=120\text{A}; T_i=175^\circ\text{C}$

$V_{GS(on)}$	Recommended Turn-on Voltage	-	18	-	V	Static
$V_{GS(off)}$	Recommended Turn-off Voltage	-	-5	-	V	
R_G	Gate Resistance	-	1.1	-	Ω	$V_{GS}=0V; f=1MHz$
Dynamic characteristics (at $T_C=25^\circ C$ unless otherwise specified)						
C_{iss}	Input Capacitance	-	12800	-	pF	$V_{DS}=1000V; f=1MHz;$ $V_{AC}=25mV$
C_{oss}	Output Capacitance	-	550	-		
C_{rss}	Reverse Transfer Capacitance	-	20	-		
E_{on}	Turn-on Energy	-	12.7	-	mJ	$V_{DS}=800V; V_{GS}=-5/+18V;$ $I_D=235A; R_{G(ext)}=3.3\Omega;$ $Load=35\mu H$
E_{off}	Turn-off Energy	-	4.6	-		
Q_{GS}	Gate-source Charge	-	160	-	nC	$V_{DD}=800V; V_{GS}=-5/+18V;$ $I_D=100A$
Q_{GD}	Gate-drain Charge	-	165	-		
Q_G	Total Gate Charge	-	625	-		
$t_{d(on)}$	Turn-on Delay Time	-	37.2	-	ns	$V_{DS}=800V; V_{GS}=-5/+18V;$ $I_D=235A; R_{G(ext)}=3.3\Omega;$ $Load=35\mu H$
t_r	Rise Time	-	31.8	-		
$t_{d(off)}$	Turn-off Delay Time	-	70.1	-		
t_f	Fall Time	-	23.8	-		

Body Diode Characteristics ($T_J=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{FSD}	Forward Voltage	-	-	6	V	$V_{GS}=0V; I_F=150A$
I_S	Continuous Diode Forward Current	-	150	-	A	$V_{GS}=0V; T_C=25^\circ C$
T_{RR}	Reverse Recovery Time	-	54.5	-	ns	$V_{GS}=-5/+18V; I_F=235A$ $V_R=800V; R_{G(ext)}=3.3\Omega;$ $Load=35\mu H$
Q_{RR}	Reverse Recovery Charge	-	3560	-	nC	
I_{RRM}	Peak Reverse Recovery Current	-	259	-	A	

NTC Thermistor Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
R_{25}	Rated Resistance	-	5.00	-	k Ω	$T_{NTC}=25^\circ C$
$\Delta R/R$	Deviation of R_{100}	-5	-	5	%	$T_{NTC}=100^\circ C; R_{100}=493.3\Omega$
$B_{25/50}$	Beta Value for $25^\circ C$ to $50^\circ C$	-	3375	-	K	$R_2=R_{25} \exp[B_{25/50}(1/T_2-1/(298.15K))]$
$B_{25/80}$	Beta Value for $25^\circ C$ to $80^\circ C$	-	3414	-	K	$R_2=R_{25} \exp[B_{25/80}(1/T_2-1/(298.15K))]$
$B_{25/100}$	Beta Value for $25^\circ C$ to $100^\circ C$	-	3436	-	K	$R_2=R_{25} \exp[B_{25/100}(1/T_2-1/(298.15K))]$

Typical Characteristics

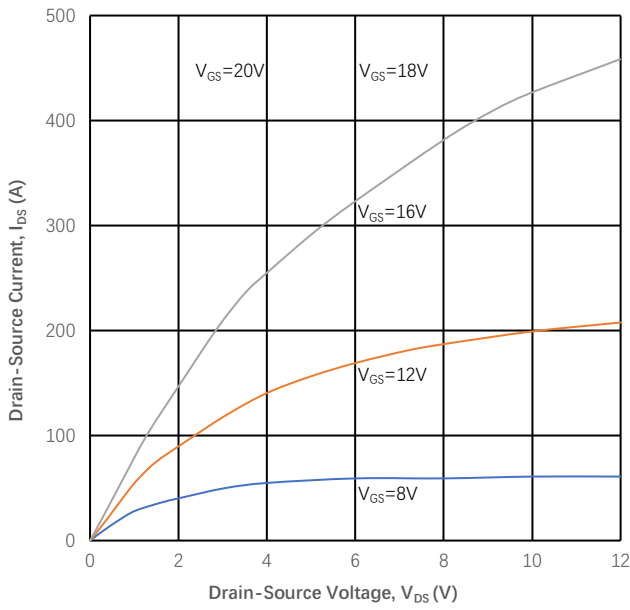


Figure 1
 Output Characteristics (T_J=25°C)

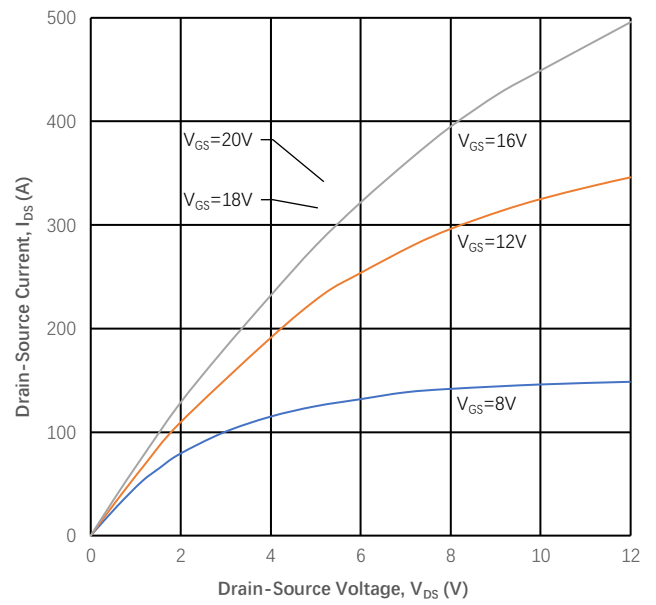


Figure 2
 Typical Output Characteristics (T_J=150°C)

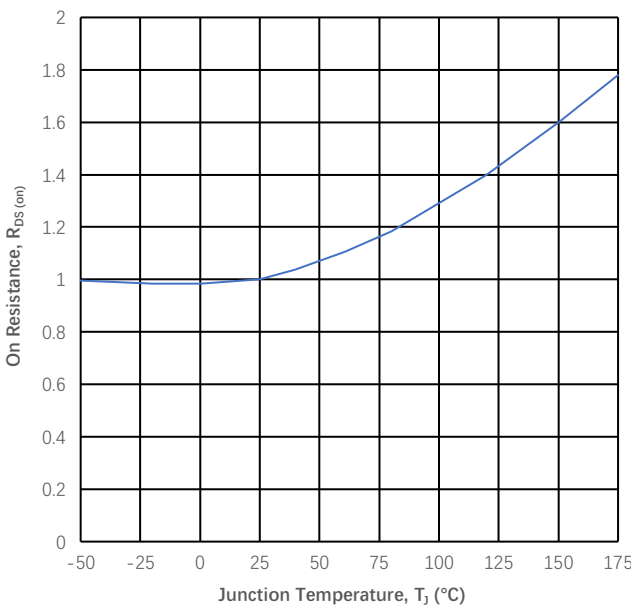


Figure 3
 Normalized On-Resistance vs. T_J

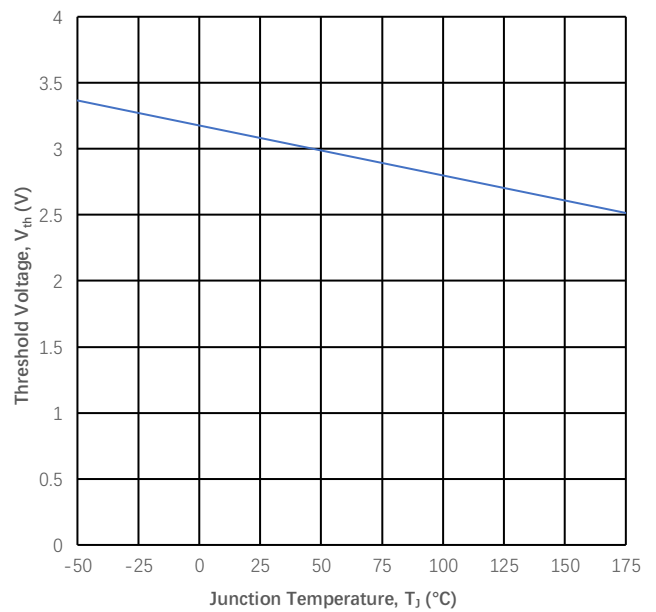


Figure 4
 Threshold Voltage vs. Temperature

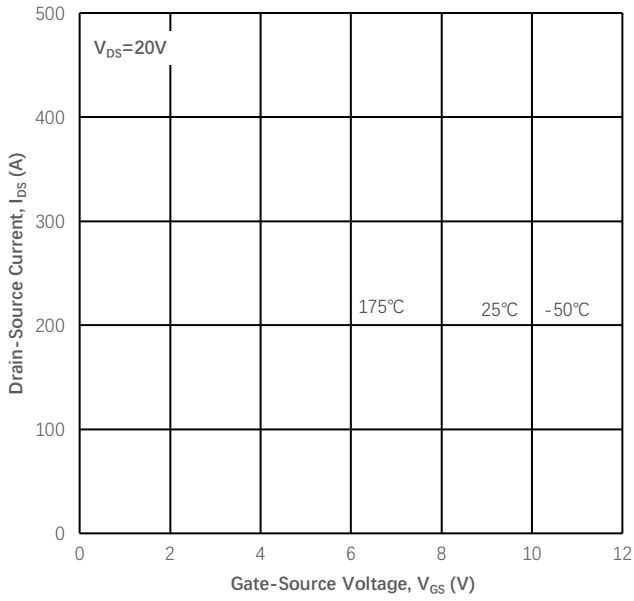


Figure 5
 Transfer Characteristic for Various T_J

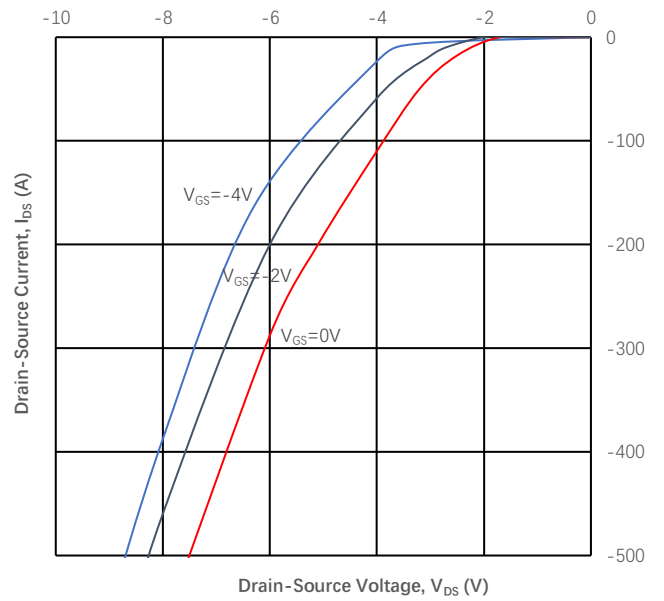


Figure 6
 Body Diode Characteristic

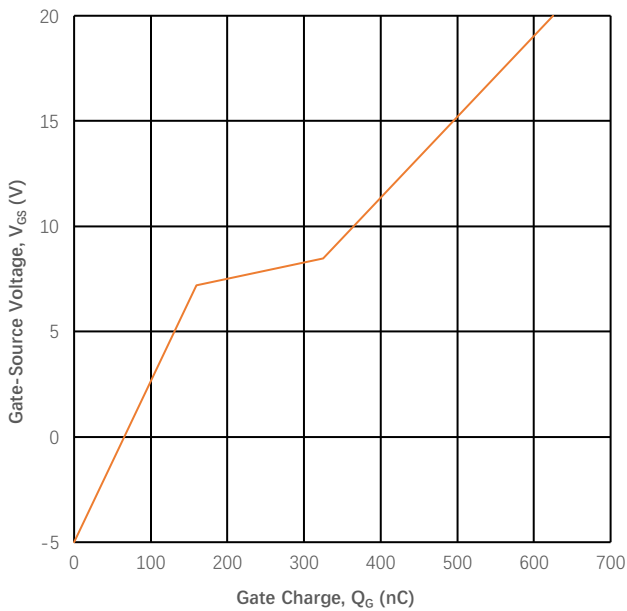


Figure 7
 Gate Charge Characteristics

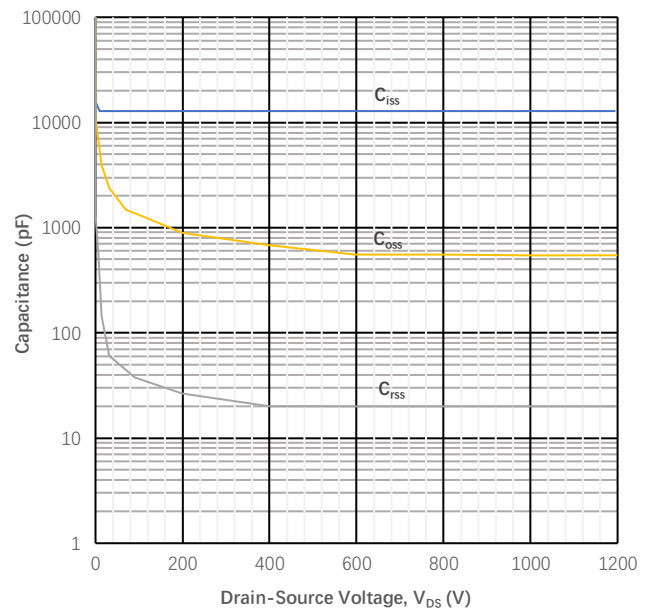


Figure 8
 Capacitances vs. V_{DS}

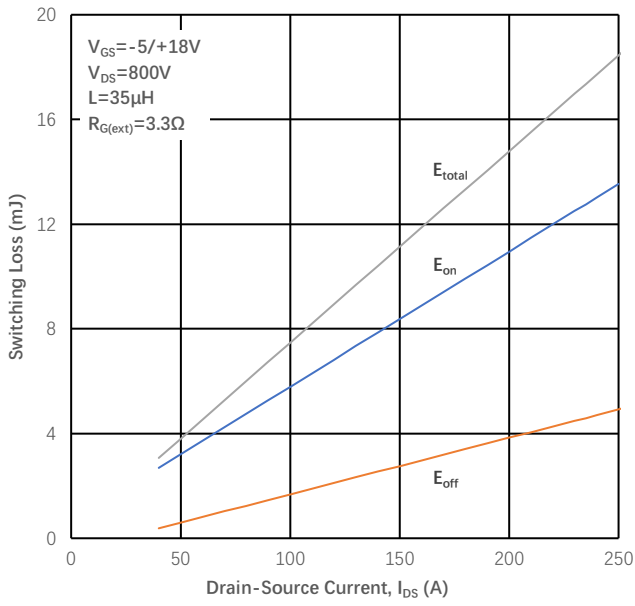


Figure 9

Inductive Switching Energy vs. Drain Current

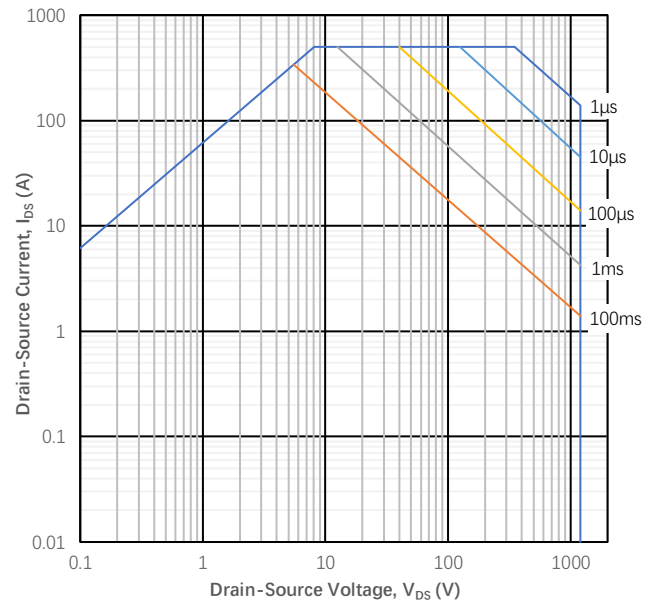
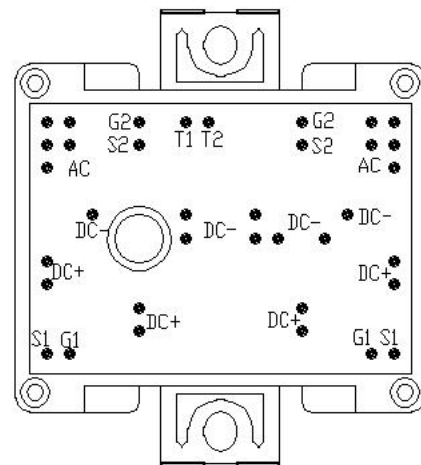
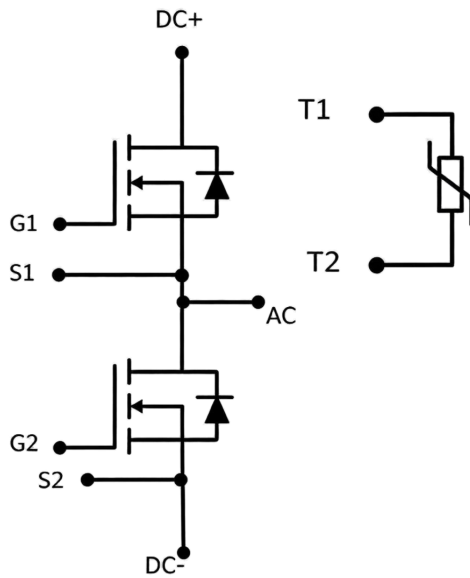


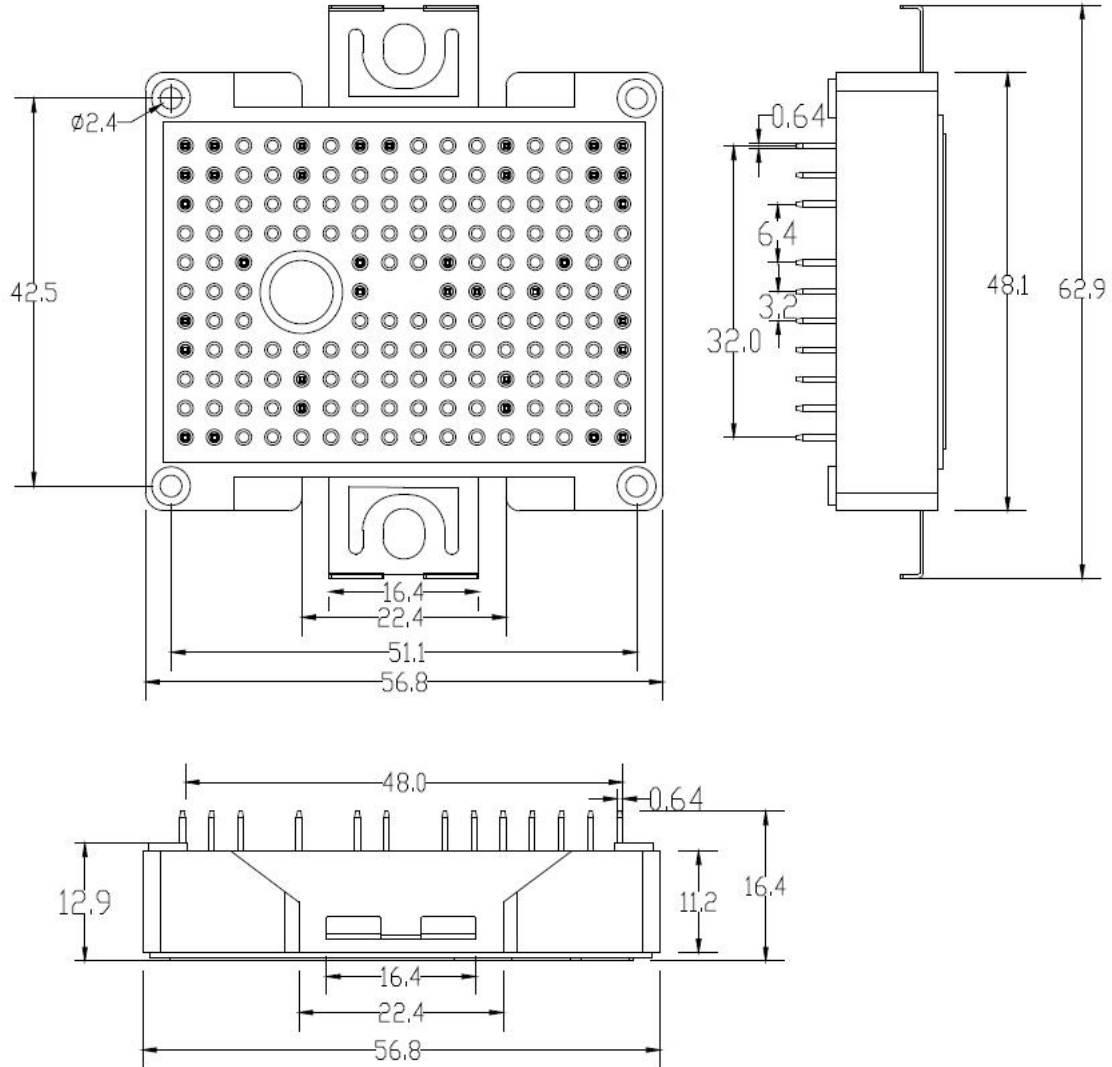
Figure 10

Safe Operating Area

Circuit Diagram



Package Outlines(Unit: mm):



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