

1 Description

These N-channel enhancement mode power mosfets used advanced trench technology design, provided excellent Rdson and low gate charge. Which accords with the RoHS standard.

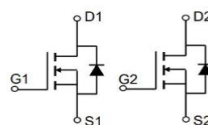
2 Features

- Low on resistance
- Low gate charge
- Fast switching
- Low reverse transfer capacitances
- 100% single pulse avalanche energy test
- 100% ΔV_{DS} test

3 Applications

- Power switching applications
- Inverter management system
- Electric tools
- Automotive electronics

CHIP-1 & CHIP-2

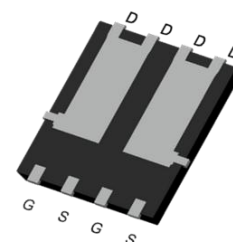


$$V_{DSS} = 60V$$

$$R_{DS(on)} (TYP) = 10.8m\Omega$$

$$I_D (\text{Silicon limit}) = 45A$$

$$I_D (\text{Package limit}) = 38A$$



DFN5*6-Dual

4 Electrical Characteristics

4.1 Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter		Symbol	Rating	Units
Drain-to-Source Voltage		V_{DSS}	60	V
Gate-to-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$ (Silicon limit)	I_D	45	A
	$T_C=25^\circ\text{C}$ (Package limit)		38	A
	$T_C=100^\circ\text{C}$		29	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	152	A
Single Pulse Avalanche Energy ⁽⁴⁾		E_{AS}	196	mJ
Power	$T_C=25^\circ\text{C}$	P_{tot}	45	W
Junction Temperature Range		T_j	-55~150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55~150	$^\circ\text{C}$

4.2 Thermal Characteristics

Parameter	Symbol	Value		Units
		Typ	Max	
Thermal Resistance, Junction to Case-sink	R_{thJC}	---	2.8	$^\circ\text{C/W}$

4.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Off Characteristics						
Drain-to-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60	---	---	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _C =25℃	---	---	1	μA
		V _{DS} =60V, V _{GS} =0V, T _C =125℃	---	---	100	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain-to-Source on-state Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A	---	10.8	12	mΩ
Dynamic Characteristics						
	C _{iss}					
Input Capacitance	C _{oss}	V _{GS} =0V, V _{DS} =30V, f=1.0MHz	---	1796	---	pF
Output Capacitance			---	149	---	
Reverse Transfer Capacitance	C _{rss}		---	119	---	
Gate Resistance	R _G	V _{DD} =0V, V _{GS} =0V, F=1MHz	---	1.8	---	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	I _D =15A, V _{DD} =30V, V _{GS} =10V, V _{GEN} =25Ω	---	28	---	nS
Turn-on Rise Time	t _r		---	80	---	
Turn-off Delay Time	t _{d(off)}		---	78	---	
Turn-off Fall Time	t _f		---	67	---	
Total Gate Charge	Q _{gs}	V _D =15A, V _{DD} =30V, V _{GS} =10V	---	32.5	---	nC
Gate-to-Source Charge	Q _{gd}		---	12	---	
Gate-to-Drain(“Miller”) Charge			---	9	---	
Drain-Source Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V _{SD}	V _{GS} =0V, I _S =60A	---	---	1.3	V
Diode Forward Current	I _S		---	---	38	A
Reverse Recovery Time	t _{rr}	T _J =25℃, I _F =30A, di/dt=100A/μs, V _{GS} =0V	---	20	---	nS
Reverse Recovery charge	Q _{rr}		---	17	---	nC

Notes:

- 1: Repetitive rating, pulse width limited by maximum junction temperature.
- 2: Surface mounted on FR4 Board, $t_s \leq 10sec$.
- 3: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4: EAS condition: $L=0.5mH, I_D=20A$, Start $T_J=25^\circ C$.

5 Typical characteristics diagrams

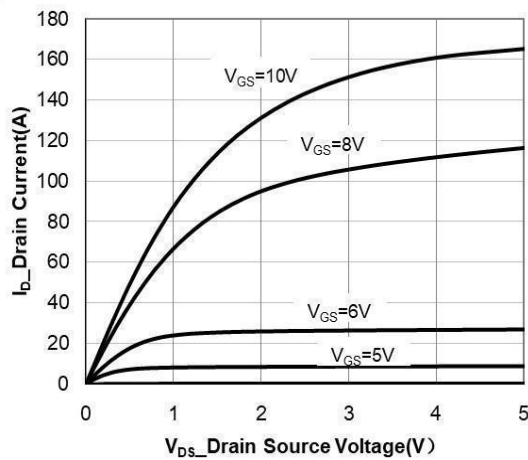


Figure 1 Output Characteristics

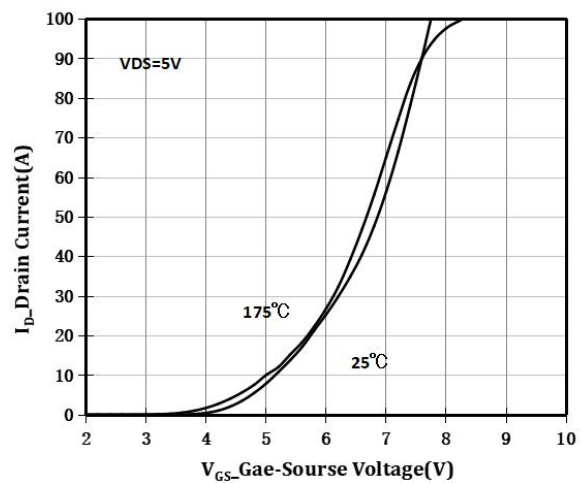


Figure 2 Transfer Characteristics

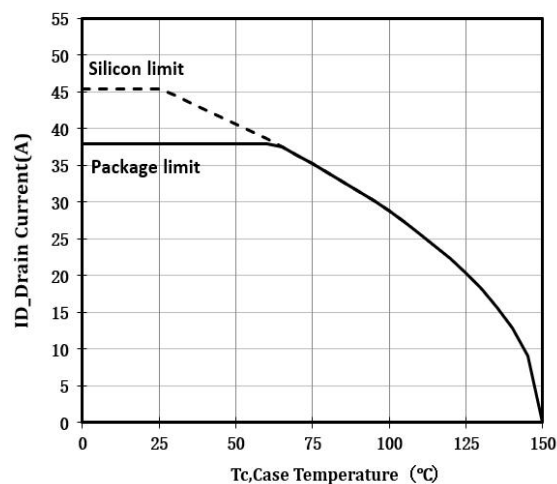


Figure 3 Current De-rating

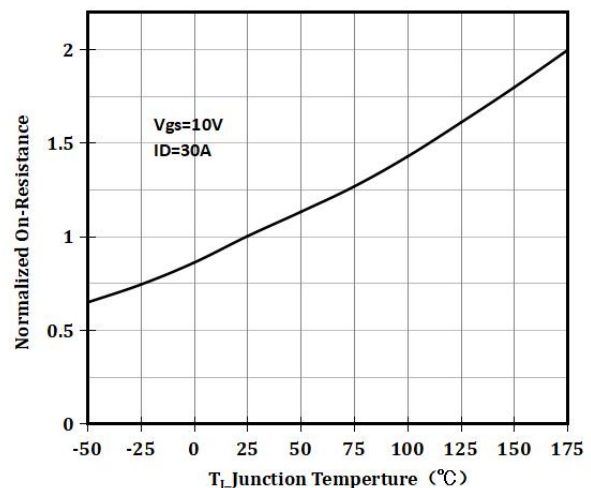


Figure 4 $R_{DS(ON)}$ - Junction Temperature

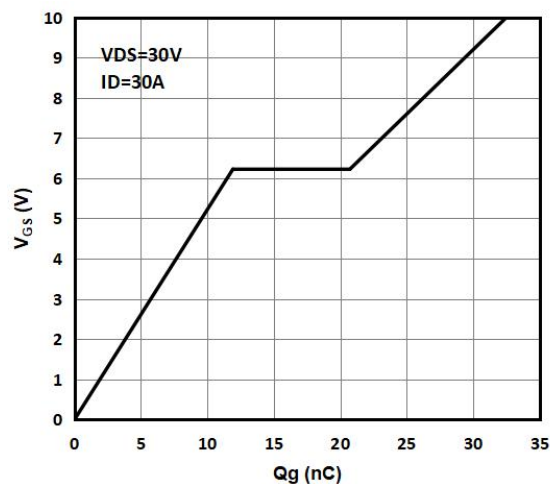


Figure 5 Gate Charge

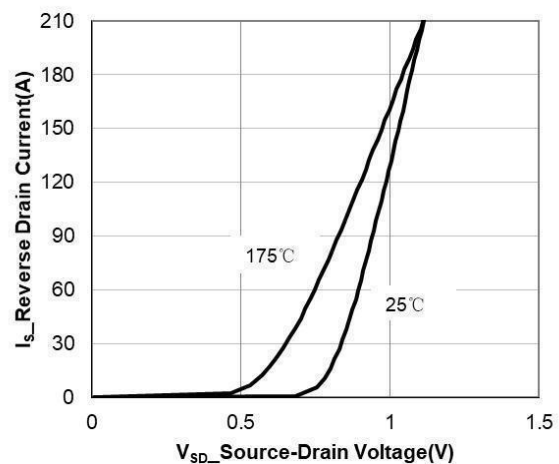


Figure 6 V_{SD} Source-Drain Diode forward

5 Typical characteristics diagrams(continues)

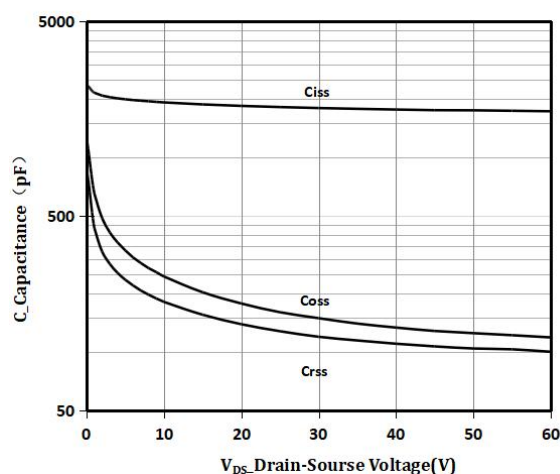


Figure 7 Capacitance Vs V_{DS}

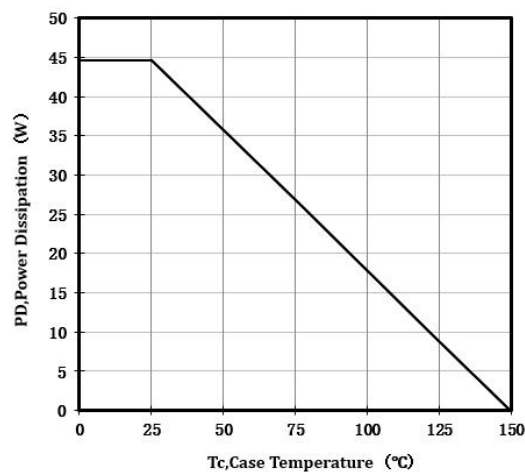


Figure 8 Power De-rating

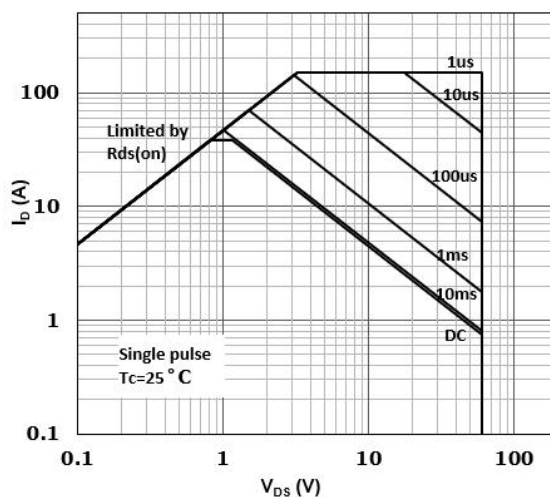


Figure 9 Safe Operation Area

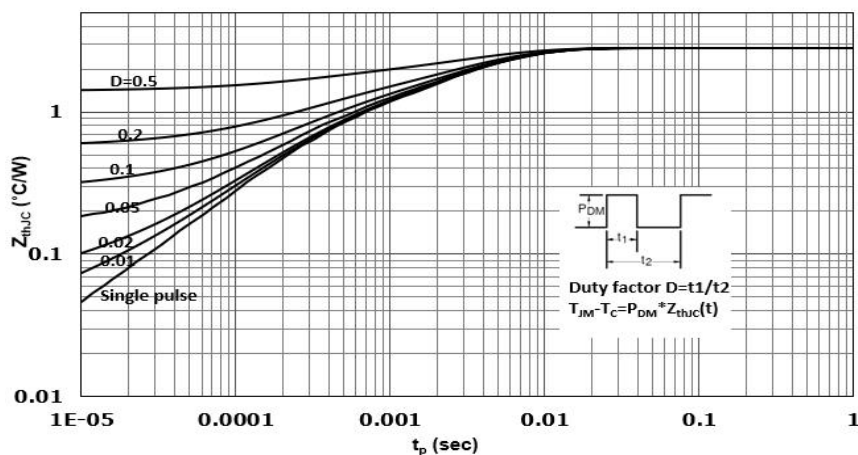
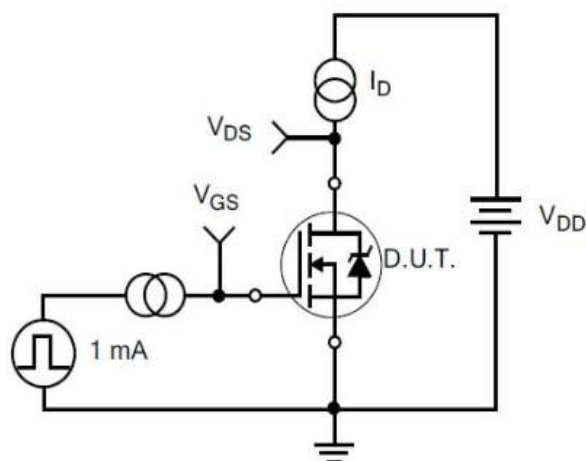
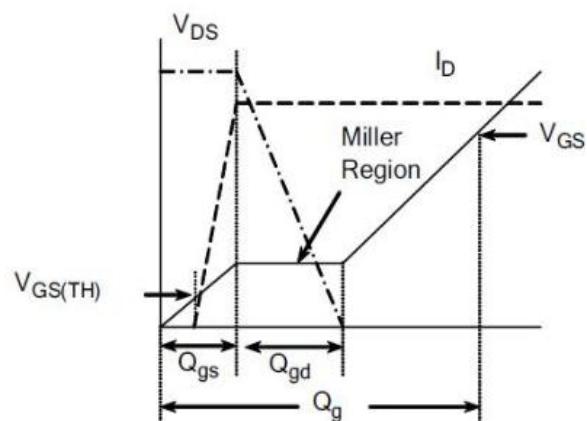


Figure 10 Normalized Maximum Transient Thermal Impedance

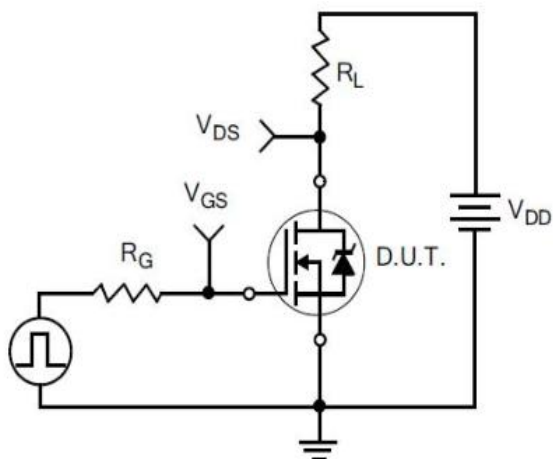
6 Typical Test Circuit and Waveform



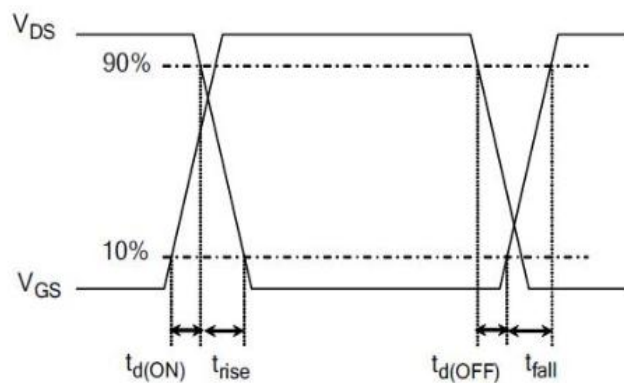
1) Gate Charge Test Circuit



2) Gate Charge Waveform

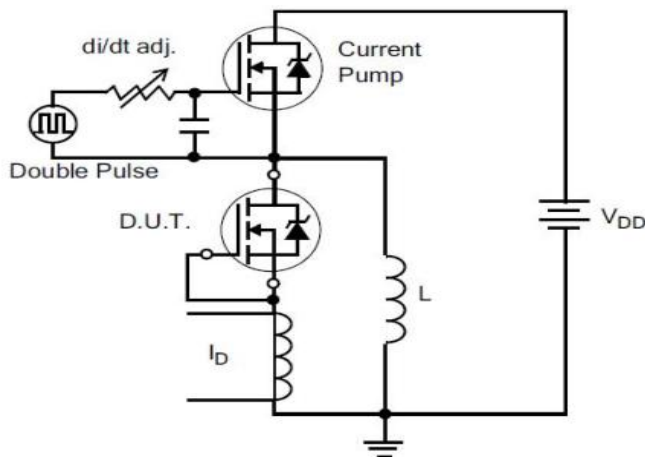


3) Resistive Switching Test Circuit

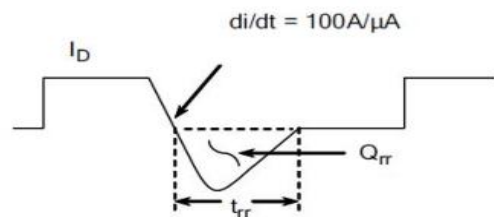


4) Resistive Switching Waveforms

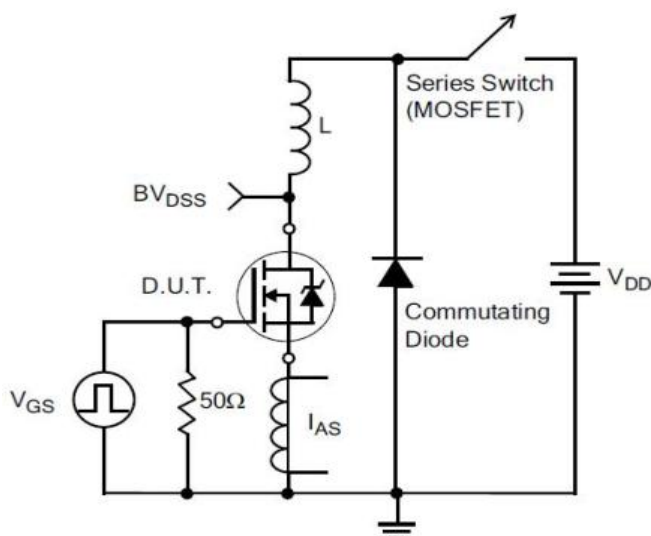
6 Typical Test Circuit and Waveform(continues)



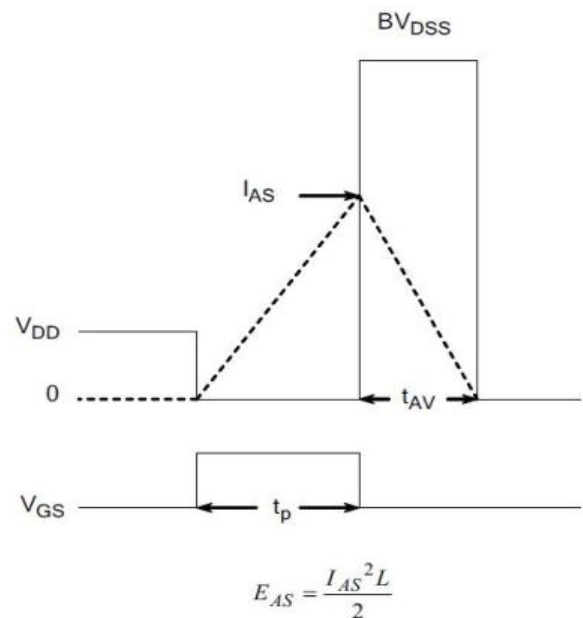
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform



7) . Unclamped Inductive Switching Test Circuit

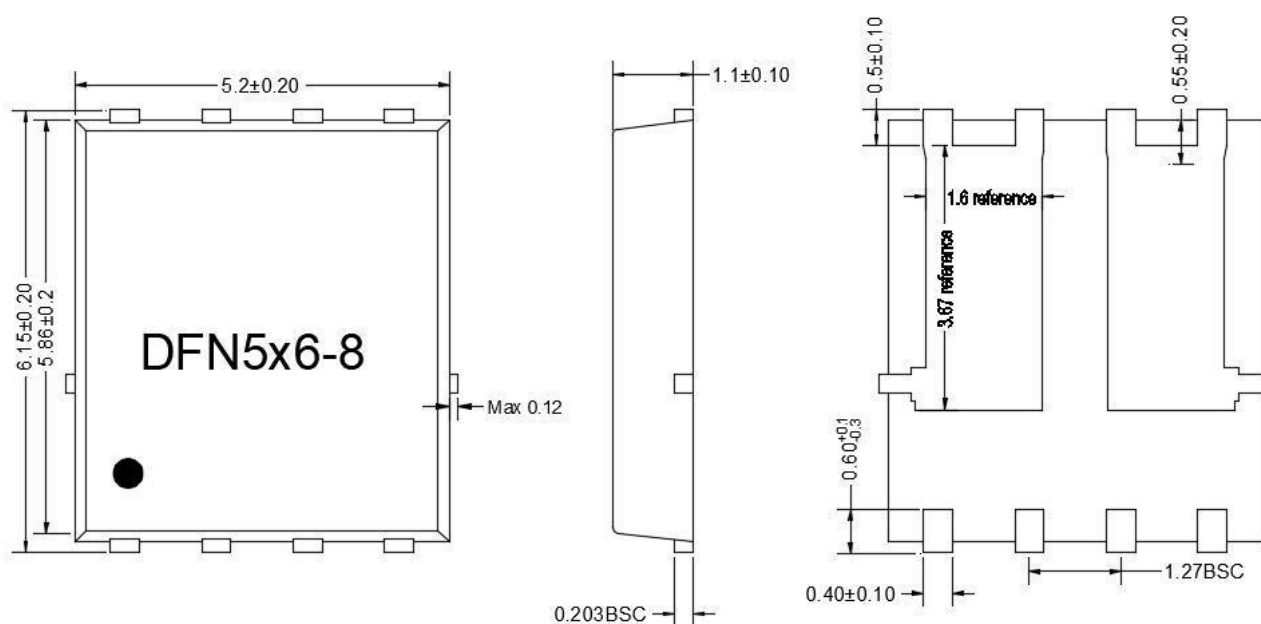


8) Unclamped Inductive Switching Waveforms

7 Product Specifications and Packaging Models

Product Model	Package Type	Mark Name	RoHS	Package	Quantity
SQJ264EP-T1_GE3-CN	DFN5*6-Dual	PD132N06N	Pb-free	Tape & Reel	3000/reel

8 Dimensions



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