To our customers,

Old Company Name in Catalogs and Other Documents

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April 1st, 2010
Renesas Electronics Corporation

EOL announced Product

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EOL announced product

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H5N2901FN

Silicon N Channel MOS FET
High Speed Power Switching

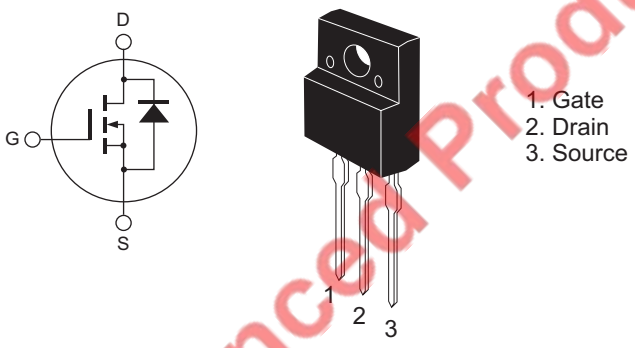
REJ03G0372-0100Z
Rev.1.00
May.28.2004

Features

- Low on-resistance
- Low leakage current
- High speed switching

Outline

TO-220FN



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Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to Source voltage	V_{DSS}	290	V
Gate to Source voltage	V_{GSS}	±30	V
Drain current	I_D	18	A
Drain peak current	$I_{D\ (pulse)}$ Note1	72	A
Body-Drain diode reverse Drain current	I_{DR}	18	A
Body-Drain diode reverse Drain peak current	$I_{DR\ (pulse)}$ Note1	72	A
Avalanche current	I_{AP} Note3	6	A
Avalanche energy	E_{AR} Note3	2.1	mJ
Channel dissipation	Pch Note2	30	W
Channel to case thermal impedance	θch-c	4.17	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C

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Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	290	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero Gate voltage drain current	I_{DSS}	—	—	1	µA	V_{DS} = 290 V, V_{GS} = 0
Gate to Source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to Source cutoff voltage	$V_{GS(off)}$	3.0	—	4.0	V	V_{DS} = 10 V, I_D = 1 mA
Forward transfer admittance	|yfs|	10	18	—	S	I_D = 9 A, V_{DS} = 10 V Note4
Static Drain to Source on state resistance	$R_{DS(on)}$	—	0.070	0.091	Ω	I_D = 9 A, V_{GS} = 10 V Note4
Input capacitance	Ciss	—	2200	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	300	—	pF	
Reverse transfer capacitance	Crss	—	38	—	pF	
Turn-on delay time	td(on)	—	35	—	ns	I_D = 9 A V_{GS} = 10 V R_L = 16.1 Ω Rg = 10 Ω
Rise time	tr	—	60	—	ns	
Turn-off delay time	td(off)	—	110	—	ns	
Fall time	tf	—	45	—	ns	
Total Gate charge	Qg	—	56	—	nC	V_{DD} = 230 V V_{GS} = 10 V I_D = 18 A
Gate to Source charge	Qgs	—	13	—	nC	
Gate to Drain charge	Qgd	—	26	—	nC	
Body-Drain diode forward voltage	V_{DF}	—	0.9	1.5	V	I_F = 18 A, V_{GS} = 0 Note4
Body-Drain diode reverse recovery time	trr	—	190	—	ns	I_F = 18 A, V_{GS} = 0 diF/dt = 100 A/µs
Body-Drain diode reverse recovery charge	Qrr	—	1.3	—	µC	

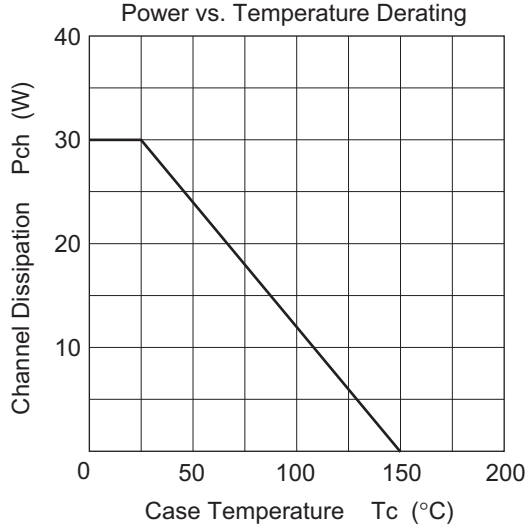
Notes: 4. Pulse test

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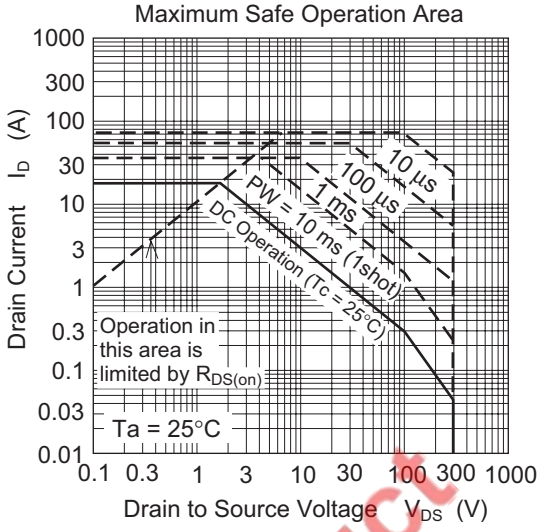
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Main Characteristics

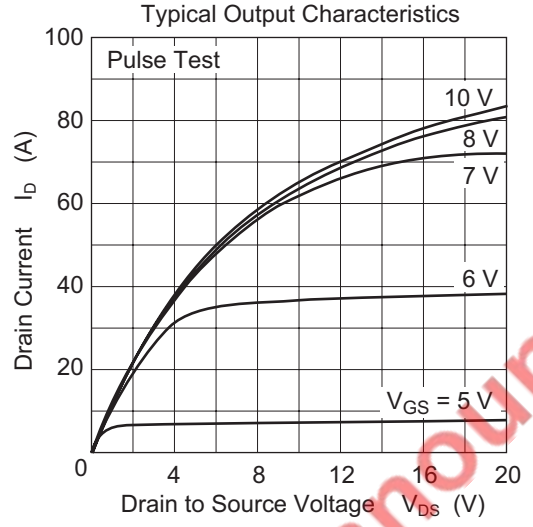
Power vs. Temperature Derating



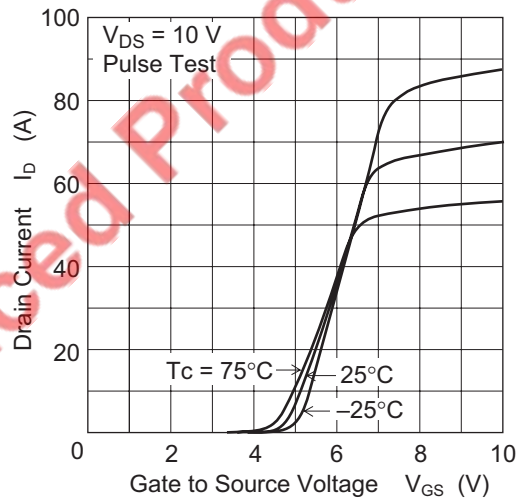
Maximum Safe Operation Area



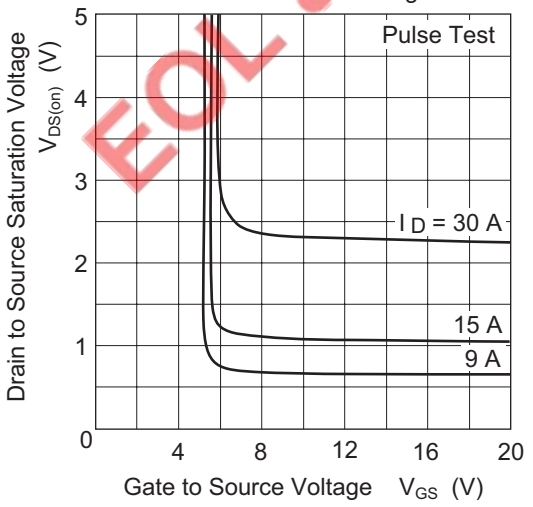
Typical Output Characteristics



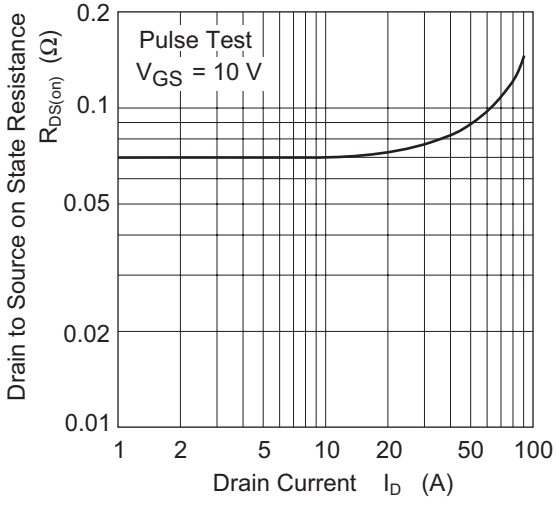
Typical Transfer Characteristics



Drain to Source Saturation Voltage vs. Gate to Source Voltage



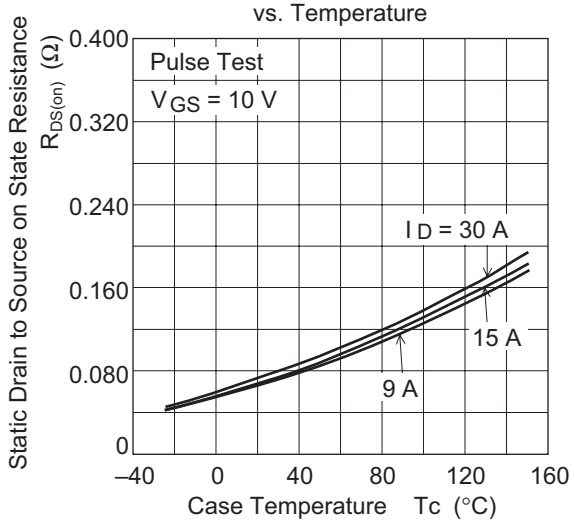
Static Drain to Source on State Resistance vs. Drain Current



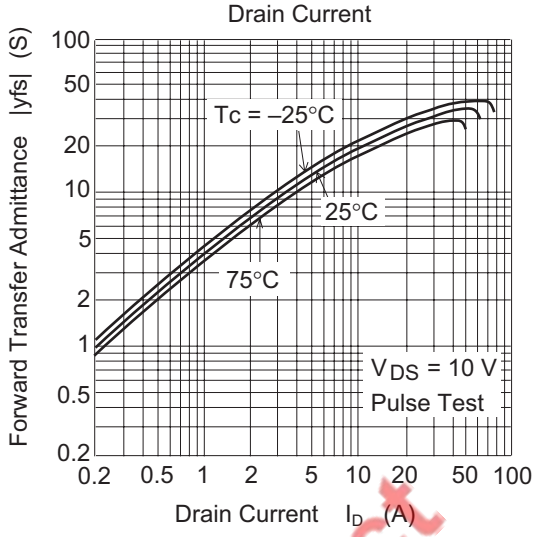
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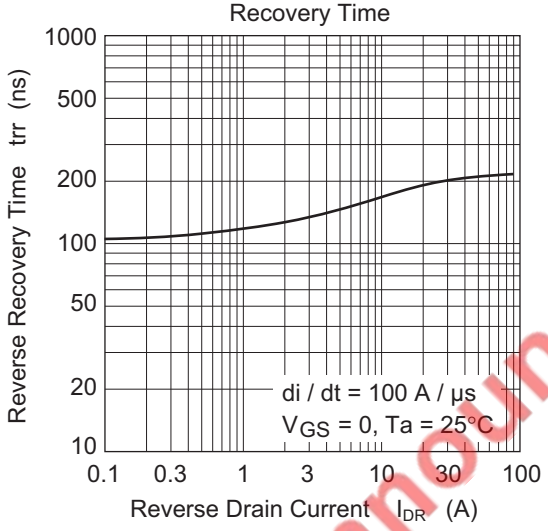
Static Drain to Source on State Resistance vs. Temperature



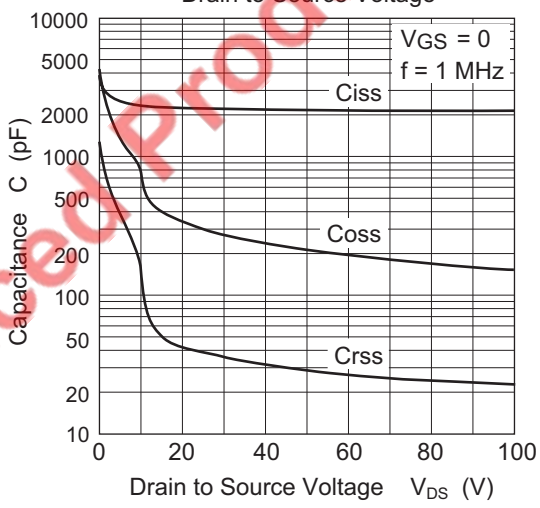
Forward Transfer Admittance vs. Drain Current



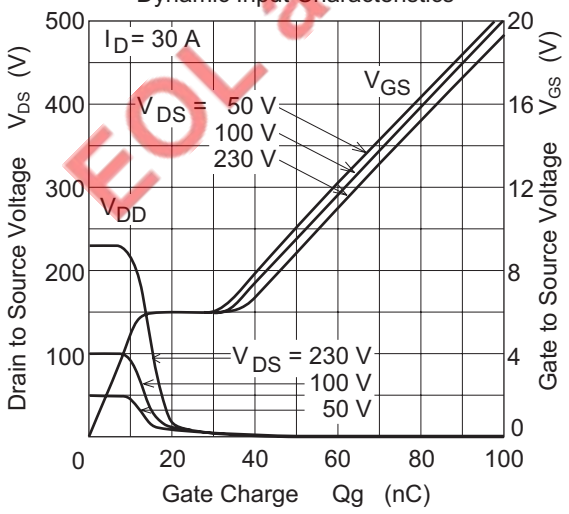
Body-Drain Diode Reverse Recovery Time



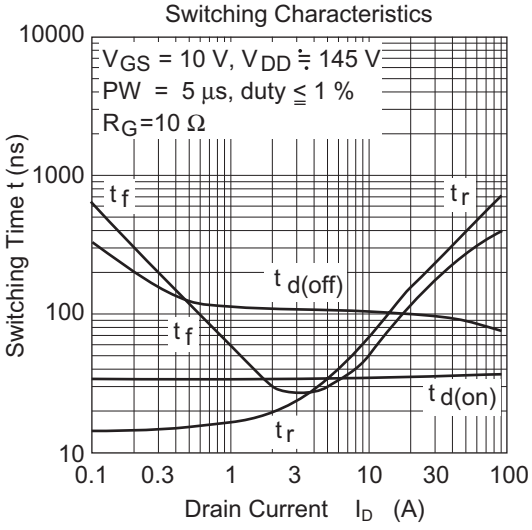
Typical Capacitance vs. Drain to Source Voltage



Dynamic Input Characteristics



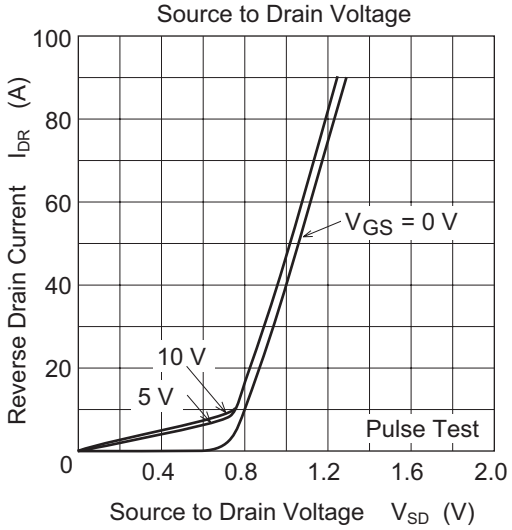
Switching Characteristics



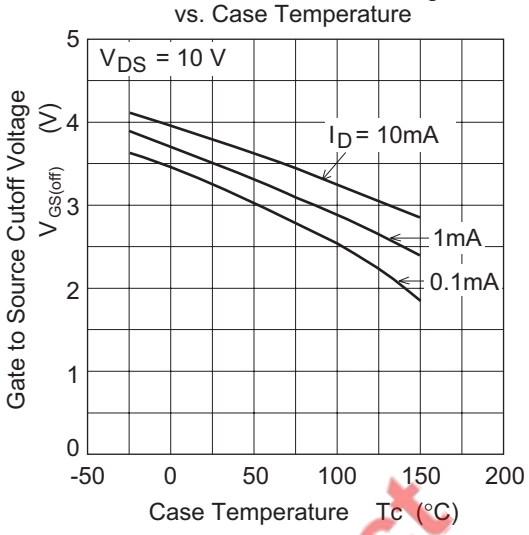
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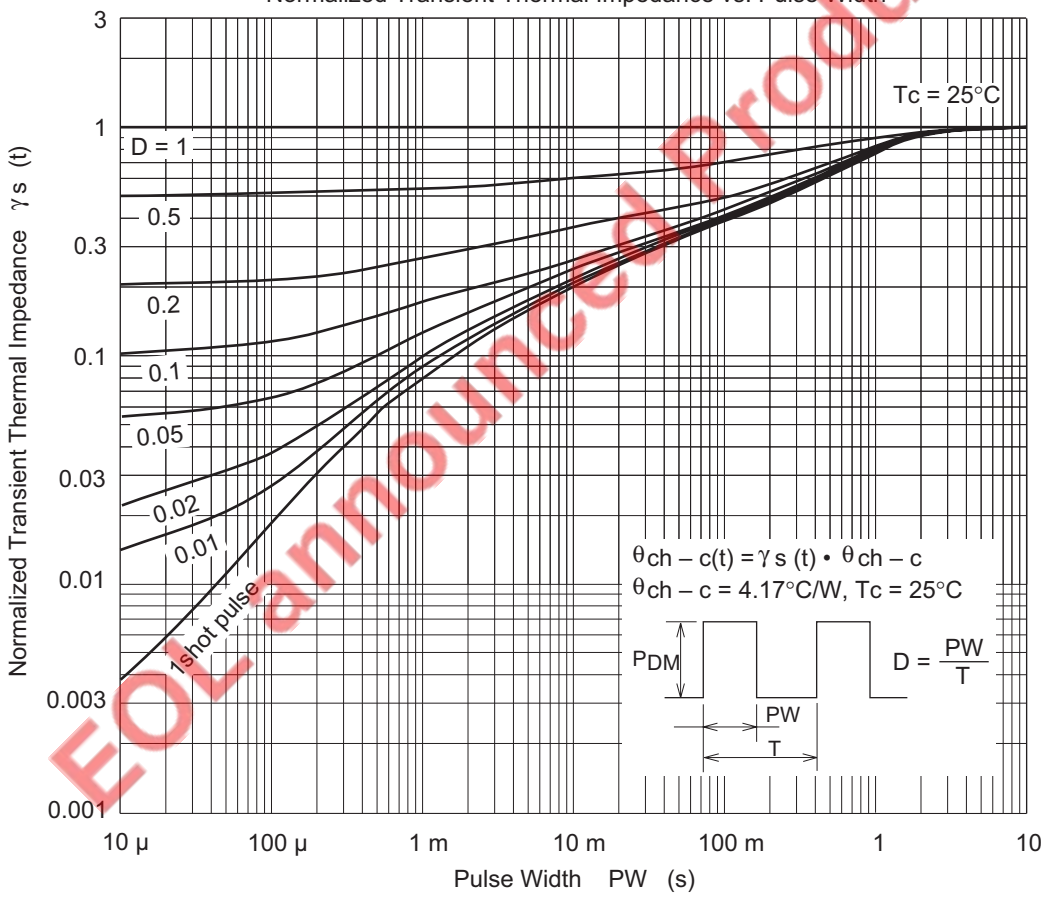
Reverse Drain Current vs. Source to Drain Voltage



Gate to Source Cutoff Voltage vs. Case Temperature



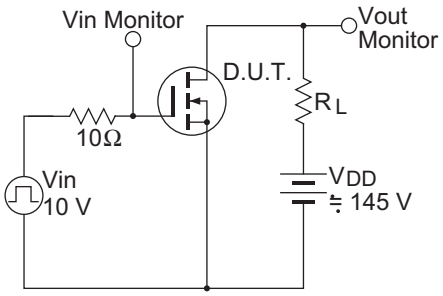
Normalized Transient Thermal Impedance vs. Pulse Width



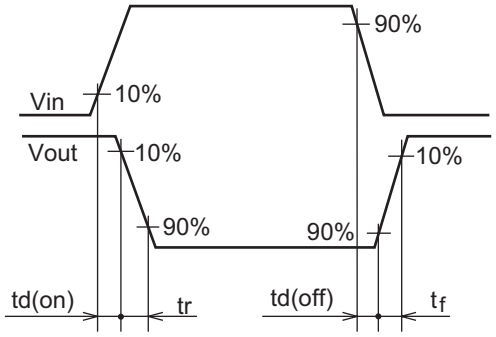
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Switching Time Test Circuit



Waveform



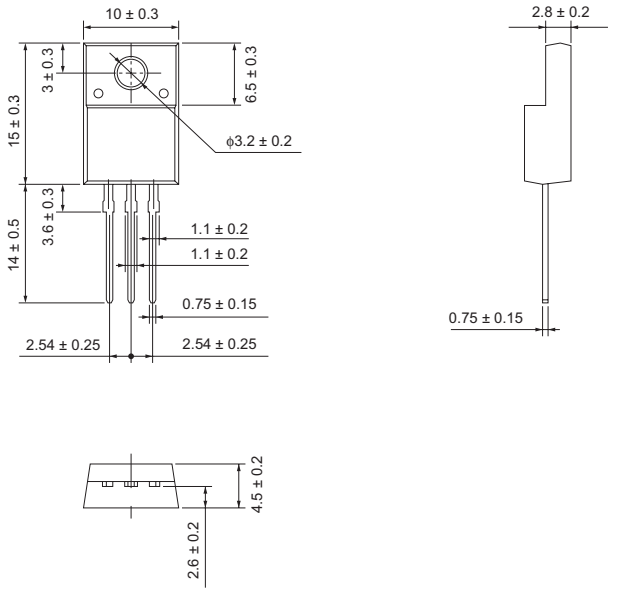
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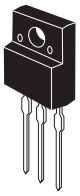
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Package Dimensions

TO-220FN

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
—	—	2.0	Cu alloy





Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A			
A_1			
A_2			
b			
D			
E			
e			
x			
y			
y_1			
ZD			
ZE			

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Ordering Information

Part Name	Quantity	Shipping Container
H5N2901FN-E	50 pcs	Plastic magazine

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