SYNM6014CLW

60V N-Channel Power MOSFET

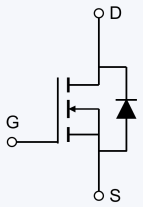
WAFER DATASHEET

Features

- V_{DS} = 60 V
- $R_{DS(ON)\_TYP}$ = 11.5 mΩ (V_{GS} = 10 V)
- $R_{DS(ON)\_TYP}$ = 14.5 mΩ (V_{GS} = 4.5 V)

Applications

- Load Switching
- Motor Driver
- High Frequency Switching



Device Symbol

Chip Information

Parameter	Value
Die Size (include scribe line)	1440 µm × 990 µm
Gate Pad Size	153 µm × 153 µm
Source Pad Size	Full Metalized Source
Scribe Line Size	60 µm
Wafer Thickness	150 µm ± 15 µm
Wafer Diameter	200 mm
Polyimide	Yes
Front Metal Composition & Thickness	AlCu, 5 µm
Back Metal Composition & Thickness	Ti/Ni/Ag, 1.4 µm
Gross Die (approximately)	20,001
Recommended Package	PDFN5060-8L

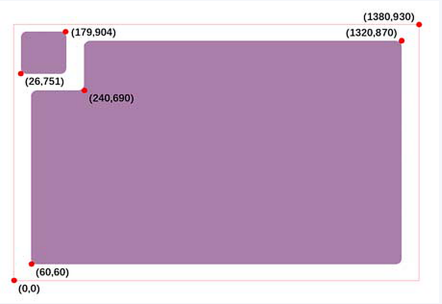


Diagram of Chip

Maximum Ratings (@ T_A = 25 °C, unless otherwise specified.)

Parameter	Symbol	Value	Units
Drain – Source Voltage	V_{DS}	60	V
Gate – Source Voltage	V_{GS}	±20	V
Junction and Storage Temperature Range	T_J, T_{STG}	−55 ~ +150	°C

Ordering Information

Orderable Part Number	Wafer Description
SYNM6014CLW	Sampling Tested Wafer
SYNM6014CLW-C	Full CP Tested Wafer

Electrical Characteristics (@ T_J = 25 °C, unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 µA	60	—	—	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V	—	—	1.0	µA
Gate–Body Leakage Current	I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V	—	—	±100	nA
On Characteristics (1)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 250 µA	1.2	1.7	2.5	V
Static Drain–Source On-Resistance (1)	$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 20 A	—	11.5	13.8	mΩ
		V_{GS} = 4.5 V, I_D = 15 A	—	14.5	17.4	mΩ
Diode Forward Voltage	V_{SD}	I_S = 2.0 A, V_{GS} = 0 V	—	0.7	1.2	V

Dynamic Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Input Capacitance	C_{iss}	V_{DS} = 30 V, V_{GS} = 0 V, f = 1 MHz	—	625	—	pF
Output Capacitance	C_{oss}		—	191	—	pF
Reverse Transfer Capacitance	C_{rss}		—	8.4	—	pF
Gate Resistance	R_g	V_{GS} = 0 V, V_{DS} = 0 V, f = 1 MHz	—	1.2	—	Ω

Gate Charge Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Total Gate Charge	Q_g	V_{DS} = 30 V, I_D = 20 A, V_{GS} = 10 V	—	10.5	—	nC
Gate–Source Charge	Q_{gs}		—	1.8	—	nC
Gate–Drain Charge	Q_{gd}		—	2.3	—	nC
Gate Plateau Voltage	$V_{plateau}$		—	3.2	—	V

Drain–Source Diode Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Body Diode Reverse Recovery Time	t_{rr}	I_F = 20 A, dI/dt = 100 A/µs, T_J = 25 °C	—	24.0	—	ns
Body Diode Reverse Recovery Charge	Q_{rr}		—	11.7	—	nC

Notes

1. $R_{DS(ON)}$ value is referred by the device assembled in PDFN5060-8L.