

HY1904C2

Single N-Channel Enhancement Mode MOSFET

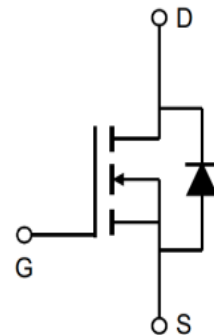
Feature Description

- 40V/65A
 $R_{DS(ON)} = 5.1m$ (typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 6.2m$ (typ.) @ $V_{GS} = 4.5V$
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen- Free Devices Available

Pin Description

Applications

- High Frequency Point-of-Load Synchronous Buck Converter
- Power Tool Application
- Networking DC-DC Power System



Ordering and Marking Information

C2
HY1904
YYXXXJWW G

Package Code
C2

Absolute Maximum Ratings

Symbol

Parameter

Rating

Electrical Characteristics (Cont.) (T_c =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY1904			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.5	-	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	2391	-	pF
C _{oss}	Output Capacitance					
C _{rss}	Reverse Transfer Capacitance					
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _G =3.3 Ω, I _{DS} =20A, V _{GS} =10V	-	13	-	ns
T _r	Turn-on Rise Time					
t _{d(OFF)}	Turn-off Delay Time					
T _f	Turn-off Fall Time					
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =32V, V _{GS} =10V, I _D =20A	-	56.5	-	nC
Q _{gs}	Gate-Source Charge					
Q _{gd}	Gate-Drain Charge					

Note: *Pulse test pulse width 300us duty cycle 2%

Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

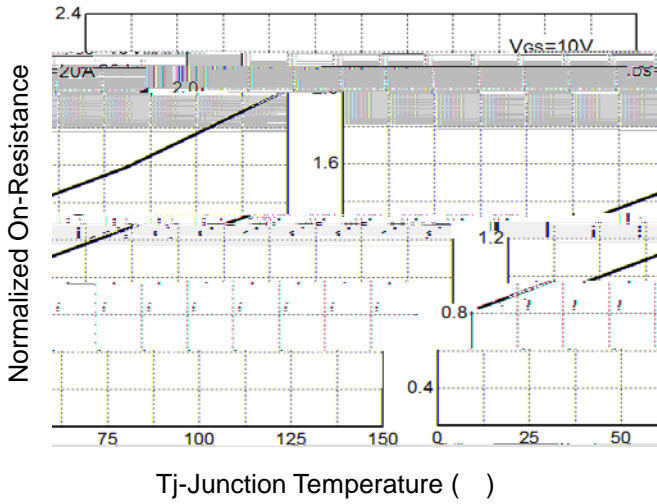


Figure 8: Source-Drain Diode Forward

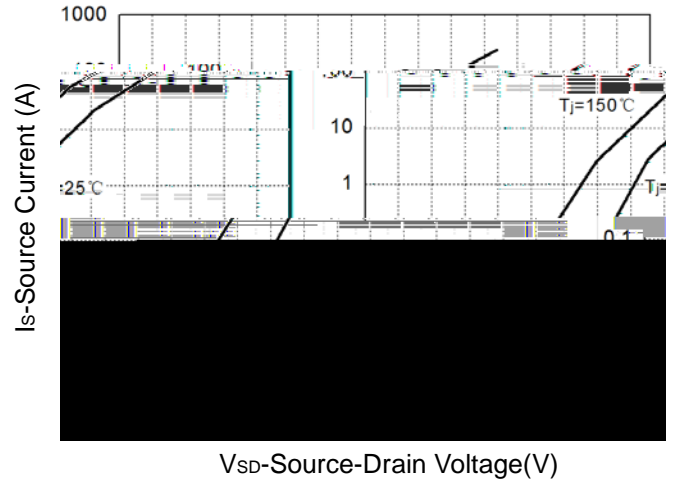


Figure 9: Capacitance Characteristics

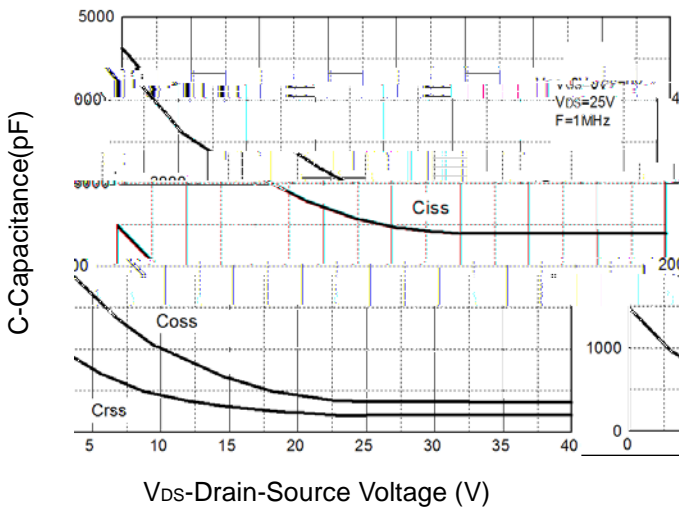
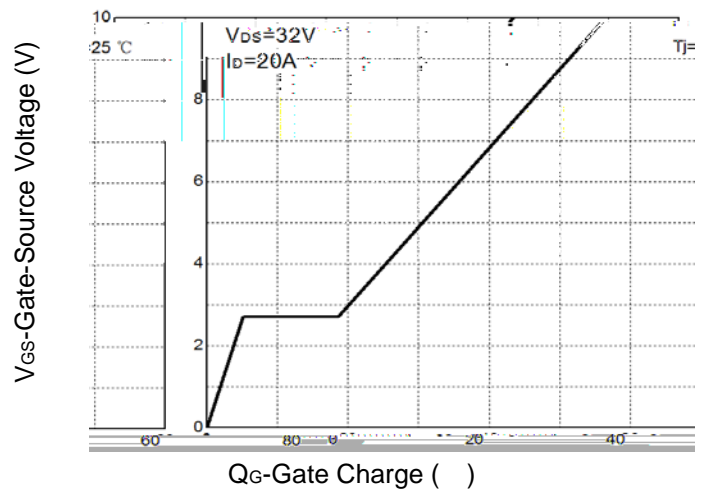


Figure 10: Gate Charge Characteristics



Avalanche Test Circuit and Waveforms

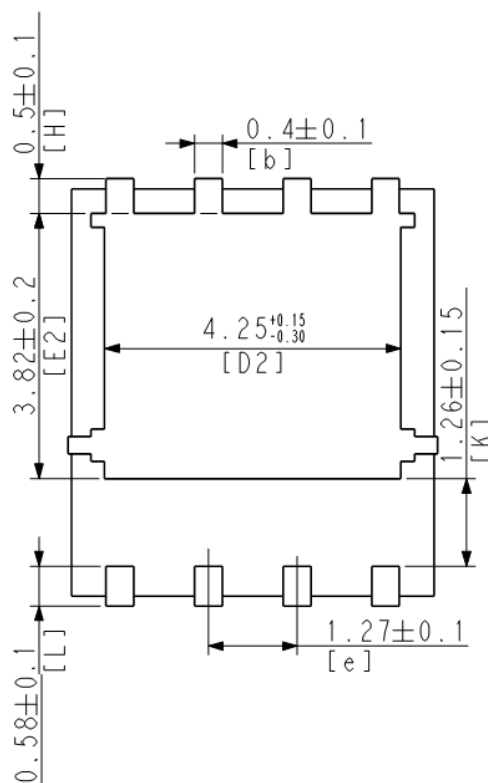
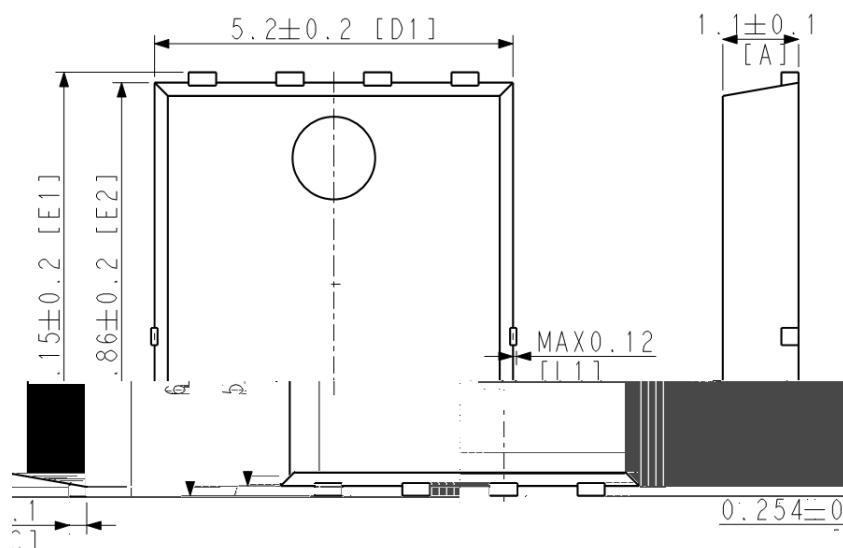
Switching Time Test Circuit and Waveforms

Device Per Unit

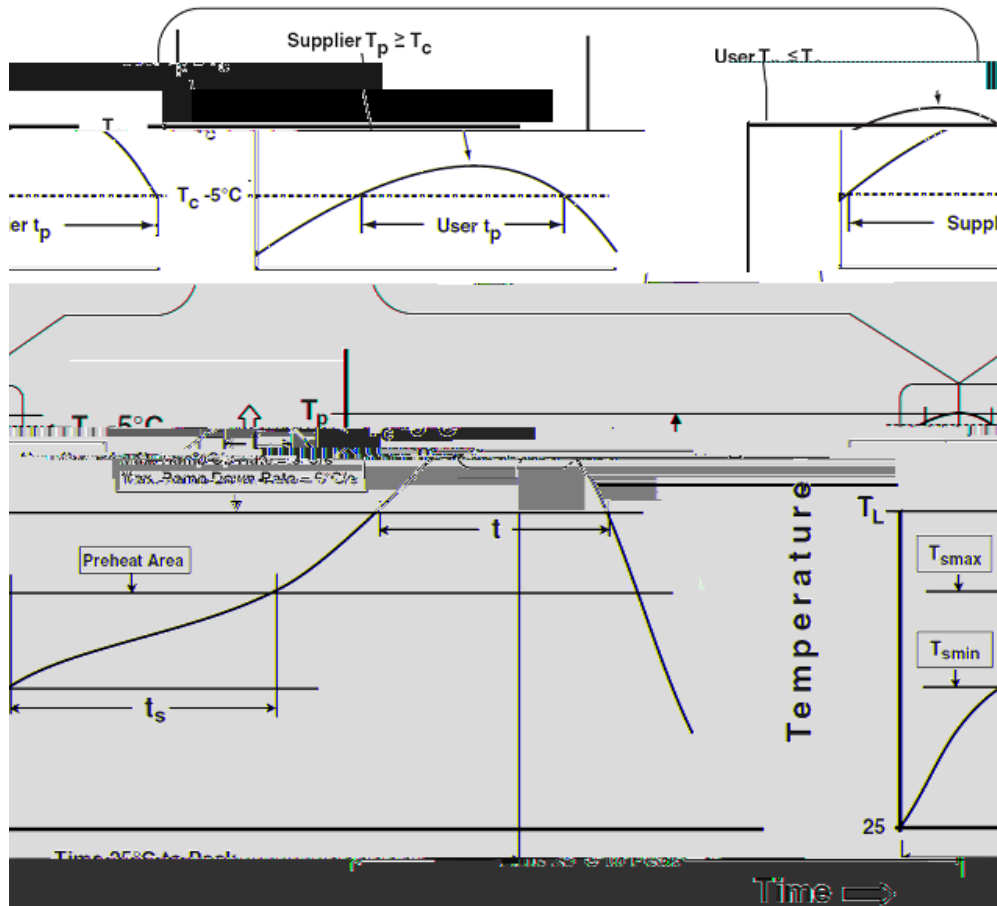
Package Type	Unit	Quantity
	Reel	5000

Package Information

PDFN5x6-8L



Classification Profile



Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat & Soak		
Temperature min (T_{smin})	100 °C	150 °C
Temperature max (T_{smax})	150 °C	200 °C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Average ramp-up rate (T_{smax} to T_P)	3 °C/second max.	3°C/second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time at liquidous (t_L)	60-150 seconds	60-150 seconds
Peak package body Temperature (T_P)*	See Classification Temp in table 1	See Classification Temp in table 2
Time (t_P)** within 5°C of the specified classification temperature (T_c)	20** seconds	30** seconds
Average ramp-down rate (T_P to T_{smax})	6 °C/second max.	6 °C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

*Tolerance for peak profile Temperature (T_P) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_P) is defined as a supplier minimum and a user maximum.

Table 1.SnPb Eutectic Process – Classification Temperatures (Tc)

Package Thickness	Volume mm <350	Volume mm 350
2.5 mm	235 °C	220 °C
2.5 mm	220 °C	220 °C

Table 2.Pb-free Process – Classification Temperatures (Tc)

Package Thickness	Volume mm <350	Volume mm 350-2000	Volume mm 2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm – 2.5 mm	260 °C	250 °C	245 °C
2.5 mm	250 °C	245 °C	245 °C

Reliability Test Program

Test item	Method	Description
SOLDERABILITY	JESD-22, B102	5 Sec, 245
HTRB	JESD-22, A108	168 Hrs /500 Hrs /1000 Hrs, Bias @ 150
PCT	JESD-22, A102	96 Hrs, 100%RH, 2atm, 121
TCT	JESD-22, A104	500 Cycles, -55 ~150

Customer Service

Worldwide Sales and Service: sales@hymexa.com

Technical Support:Technology@hymexa.com

Huayi Microelectronics Co., Ltd.

No.8928,Shangji Road,Economic and Technological Development Zone,Xi'an,China

TEL: (86-029) 86685706

FAX: (86-029) 86685705

E-mail: sales@hymexa.com

Web net: www.hymexa.com