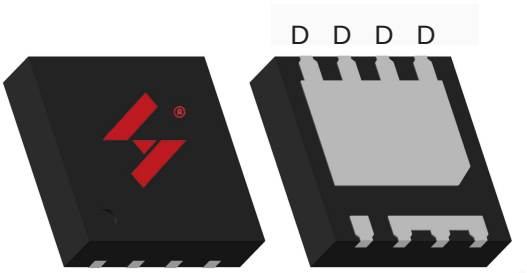
Single N-Channel Enhancement Mode MOSFET

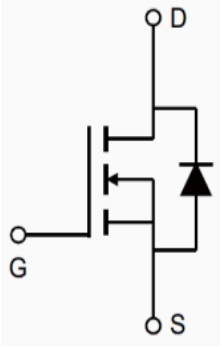
Features

- 30V/ 30A
  $R_{DS(ON)}$= 4.2mΩ (typ.) @ V_{GS}=10 V
  $R_{DS(ON)}$= 5.5mΩ (typ.) @ V_{GS} 4.5V
- High Cell Desity for low Rds(on)
- Halogen Device Available

Pin Description



DFN3*3-8L



Applications

- Battery pack protection
- Power tool

Ordering and Marking Information

Single N-Channel MOSFET

C HY1303 YYXXXJWW C	Package Code C : DFN8L(0303) Date Code YYXXX WW Assembly Material C : Green Device

Note: HUAYI lead-free products contain molding compounds/die attach materials and 100% matte tin plate termination finish; which are fully compliant with RoHS. HUAYI lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J-STD-020D for MSL classification at lead-free peak reflow temperature. HUAYI defines “Green” to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

HUAYI reserves the right to make changes to improve reliability or manufacturability without notice, and advise customers to obtain the latest version of relevant information to verify before placing orders.

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	
T_J	Maximum Junction Temperature			°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	15	A
Mounted on Large Heat Sink				
I_{DM}	Pulsed Drain Current *	T_C=25°C	108**	A
I_D	Continuous Drain Current	T_C=25°C	30	A
		T_C=70°C	19	
P_D	Maximum Power Dissipation	T_C=25°C	3.1	W
		T_C=70°C	2	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		40	°C/W

Note：* Repetitive rating ; pulse width limiited by junction temperature
** Drain current is limited by junction temperature

Electrical Characteristics (T_C = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY1303			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.0	1.6	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS} =±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V,I_{DS}= 6 A	-	4.2	5.2	mΩ
					6.8	
Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=1 A, V_{GS}=0V	-	0.7	1.1	V

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

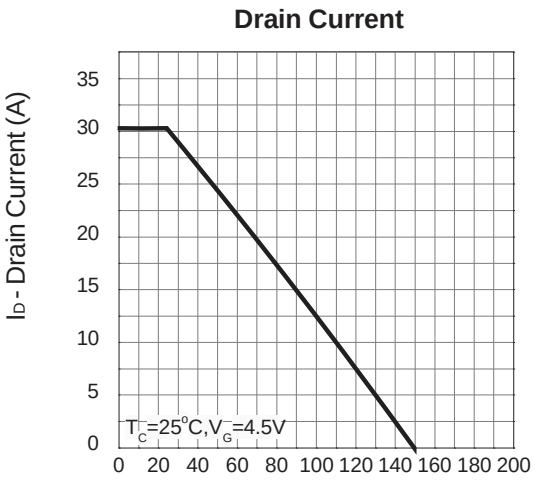
Symbol	Parameter	Test Conditions	HY1303			Unit
			Min.	Typ.	Max.	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz	-	2351	-	pF
C_{oss}	Output Capacitance		-	253	-	
C_{rss}	Reverse Transfer Capacitance		-	146	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_G=6 Ω, I_{DS}=15A, V_{GS}=10V,	-	15	-	ns
T_r	Turn-on Rise Time		-	13	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	39	-	
T_f	Turn-off Fall Time		-	10	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=24V, V_{GS}=10V, I_{DS}=15A	-	46	-	nC
Q_{gs}	Gate-Source Charge		-	3.9	-	
Q_{gd}	Gate-Drain Charge		-	8.5	-	

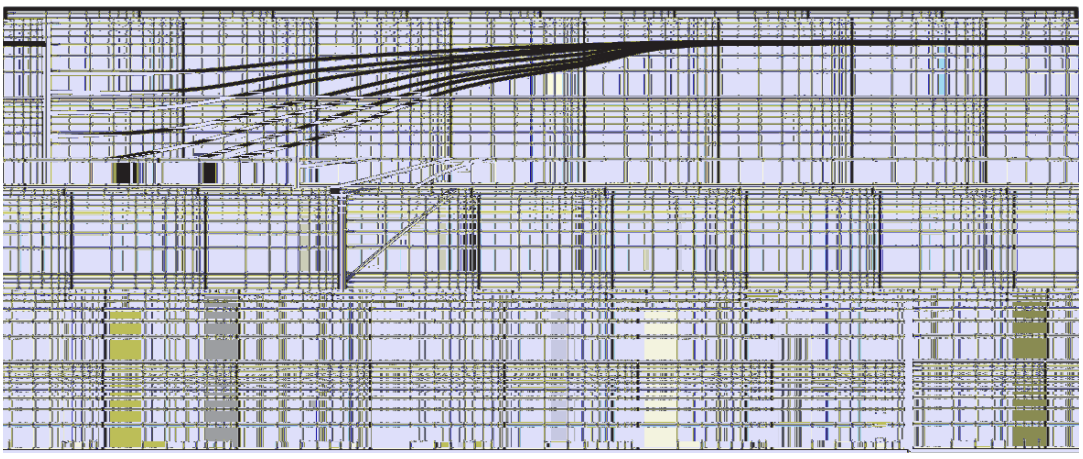
Note * : Pulse test ; pulse width ≤300μs, duty cycle≤2%.

Typical Operating Characteristics

Power Dissipation

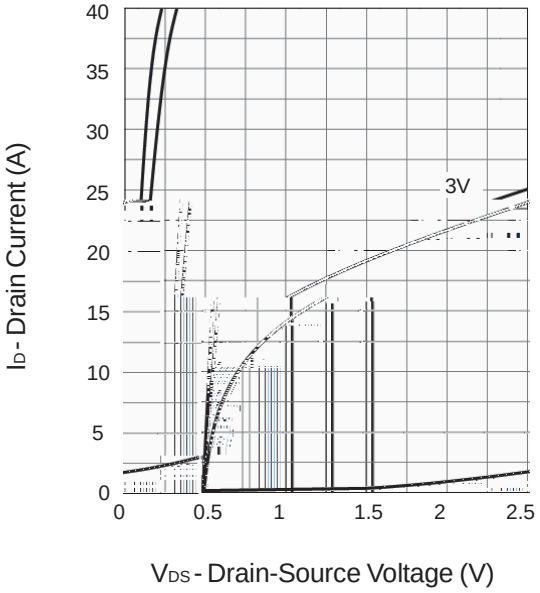
Drain Current



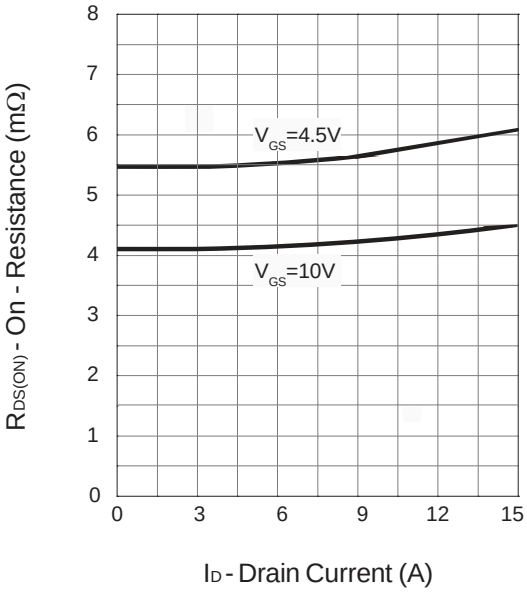


Typical Operating Characteristics (Cont.)

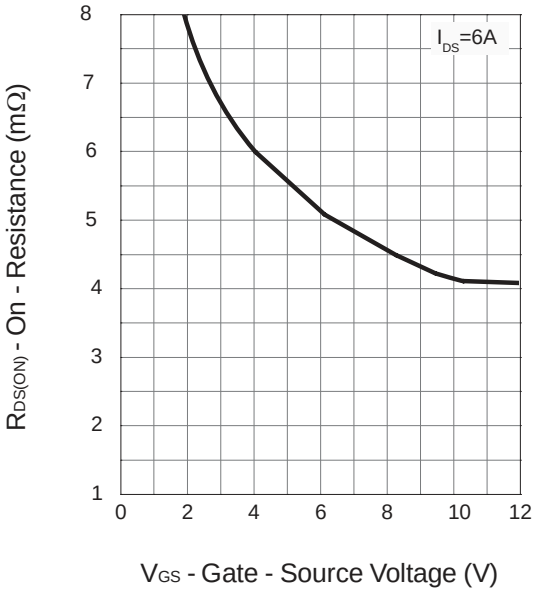
Output Characteristics



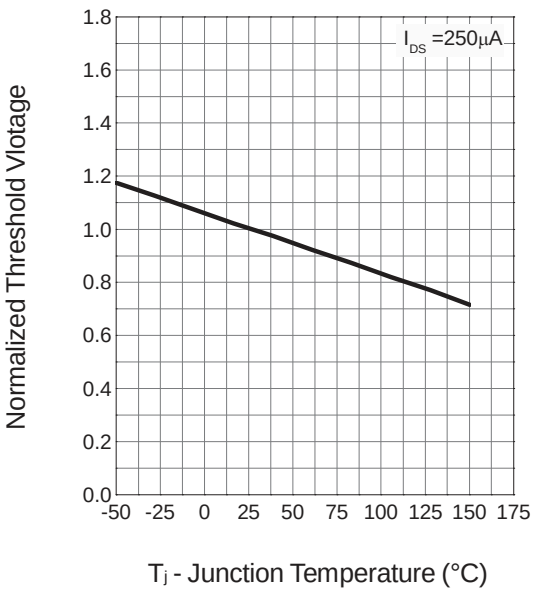
Drain-Source On Resistance



Drain-Source On Resistance

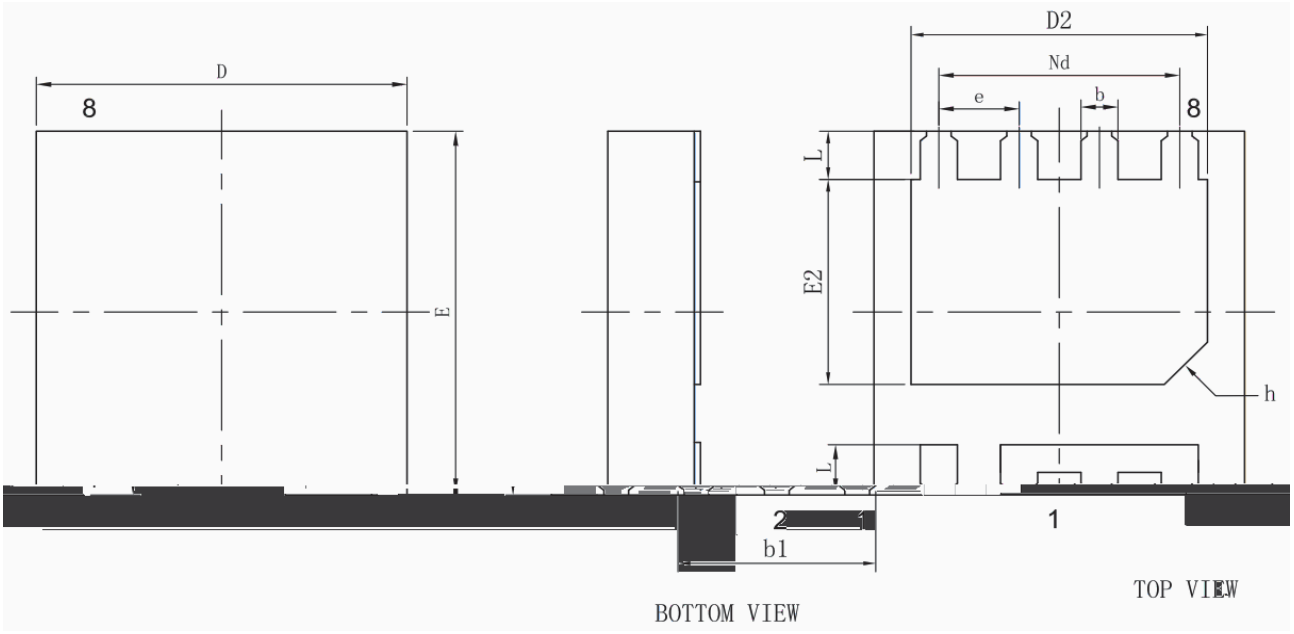


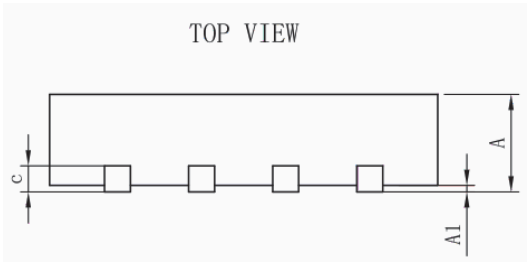
Gate Threshold Voltage



Package Information

DFN3*3-8L





SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
b	0.25	0.30	0.35
b1	1.55	1.60	165.00
c	0.19	0.20	0.21
D	2.90	3.00	3.10
D2	2.30	2.40	2.50
Nd	1.90	1.95	2.00
E	2.90	3.00	3.10
E2	1.60	1.70	1.80
e	0.65bsc		
L	0.35	0.40	0.45
h	0.30	0.35	0.40

Devices Per Unit

Package Type	Unit	Quantity
DFN3*3-8L	Reel	3000

Classification Profile