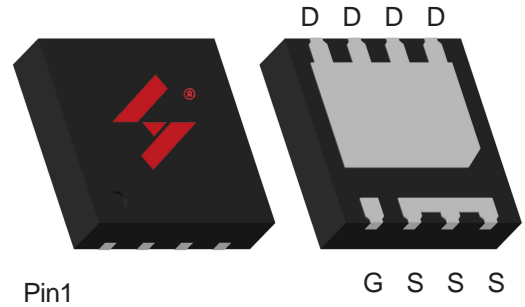


Single N-Channel Enhancement Mode MOSFET

Features

- 30V/30A
 $R_{DS(ON)} = 4.2\text{m}\Omega$ (typ.) @ $V_{GS} = 10\text{V}$
 $R_{DS(ON)} = 5.5\text{m}\Omega$ (typ.) @ $V_{GS} = 4.5\text{V}$
- High Cell Density for low $R_{ds(on)}$
- Halogen Device Available

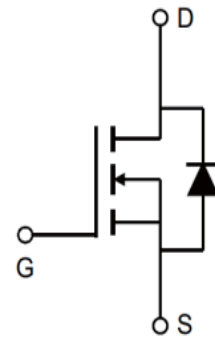
Pin Description



Applications


- Battery pack protection
- Power tool

DFN3*3-8L



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

Note : * Repetitive rating ; pulse width limited by junction temperature

** Drain current is limited by junction temperature

Electrical Characteristics ($T_C = 25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY1303			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}, I_{DS}=250\mu\text{A}$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$	-	-	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu\text{A}$	1.0	1.6	2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	-	-	± 100	nA
$R_{DS(ON)}$ *	Drain-Source On-state Resistance	$V_{GS}=10\text{V}, I_{DS}=6\text{A}$	-	4.2	5.2	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}, I_{DS}=4\text{A}$	-	5.5	6.8	$\text{m}\Omega$
Diode Characteristics						
V_{SD} *	Diode Forward Voltage	$I_{SD}=1\text{A}, V_{GS}=0\text{V}$	-	0.7	1.1	V

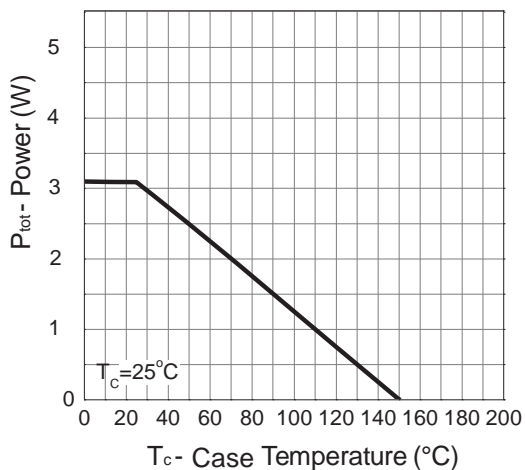
Electrical Characteristics (Cont.) ($T_c = 25^\circ\text{C}$ Unless Otherwise Noted)

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_{riss}	Reverse Transfer Capacitance		-	146	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=15V, R_G=6\ \Omega,$ $I_{DS}=15A, V_{GS}=10V,$	-	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	-	

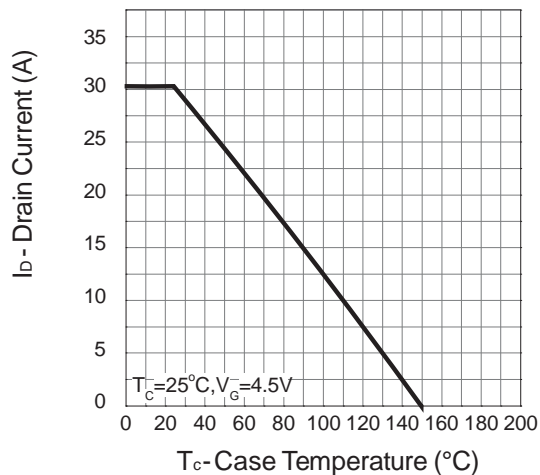
Note * : Pulse test ; pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Typical Operating Characteristics

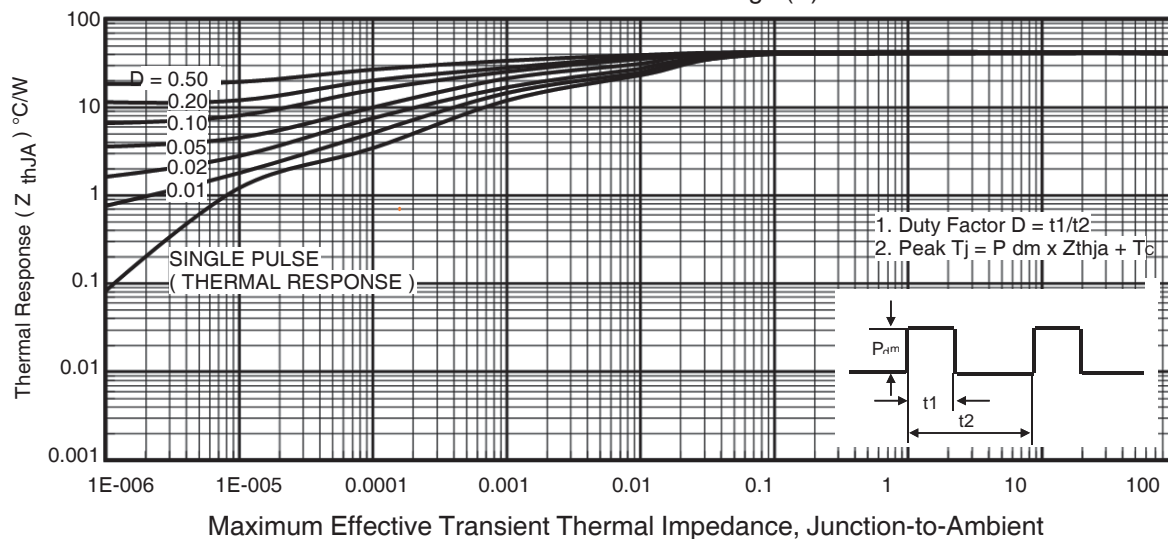
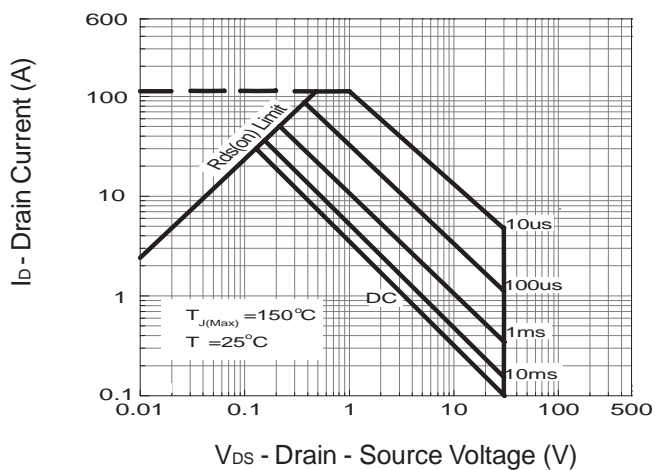
Power Dissipation



Drain Current

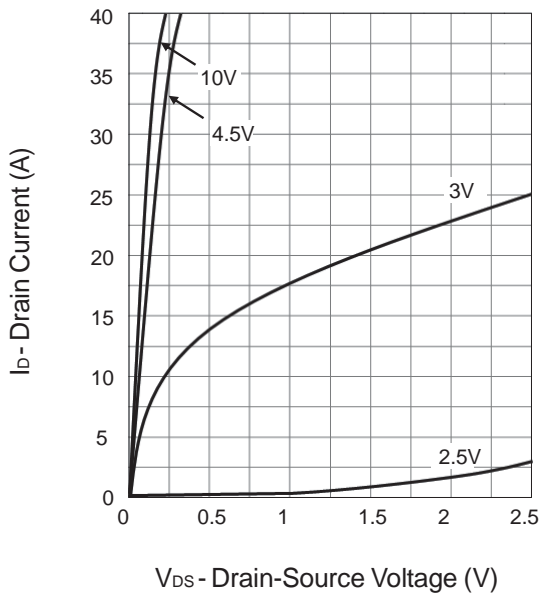


Safe Operation Area

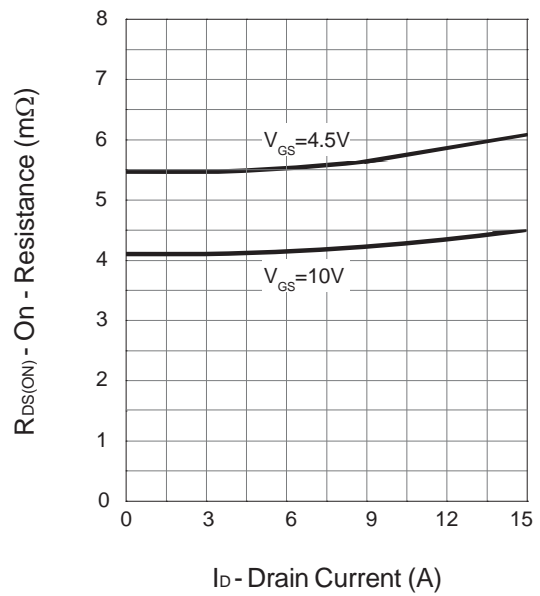


Typical Operating Characteristics (Cont.)

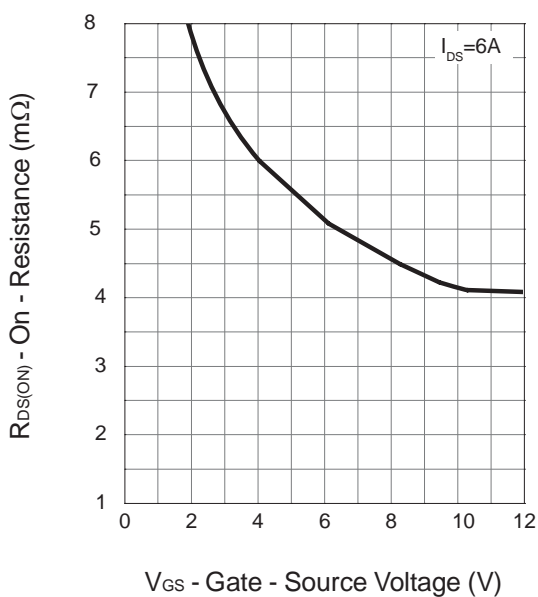
Output Characteristics



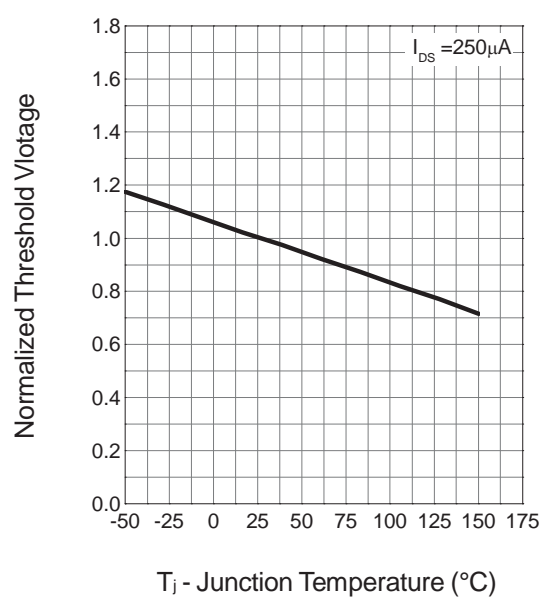
Drain-Source On Resistance



Drain-Source On Resistance

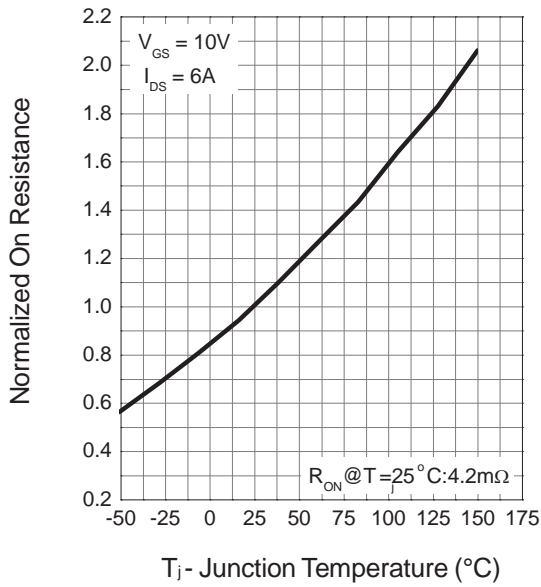


Gate Threshold Voltage

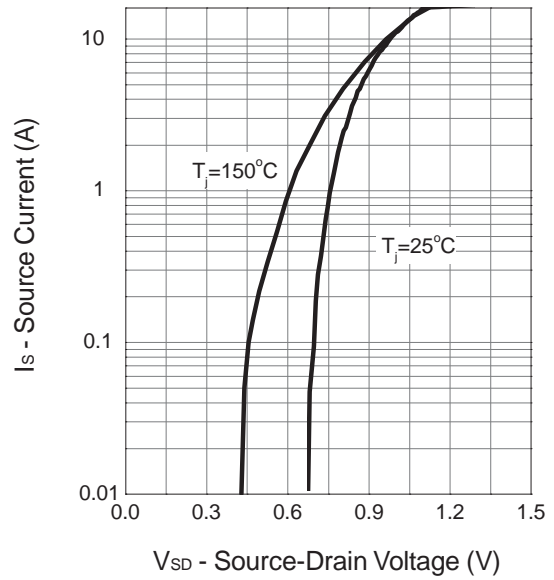


Typical Operating Characteristics (Cont.)

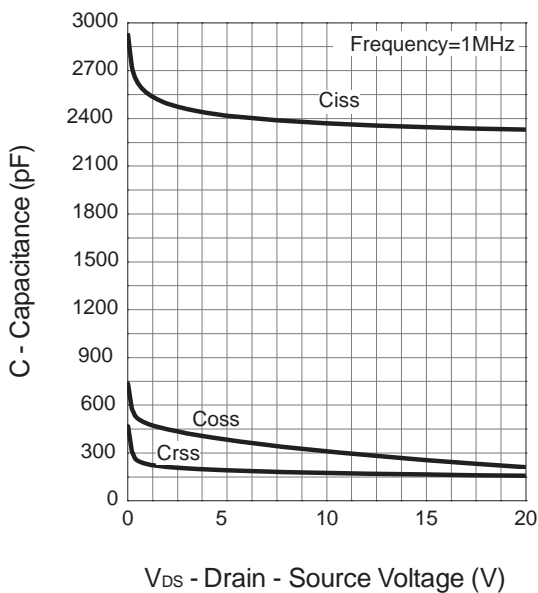
Drain-Source On Resistance



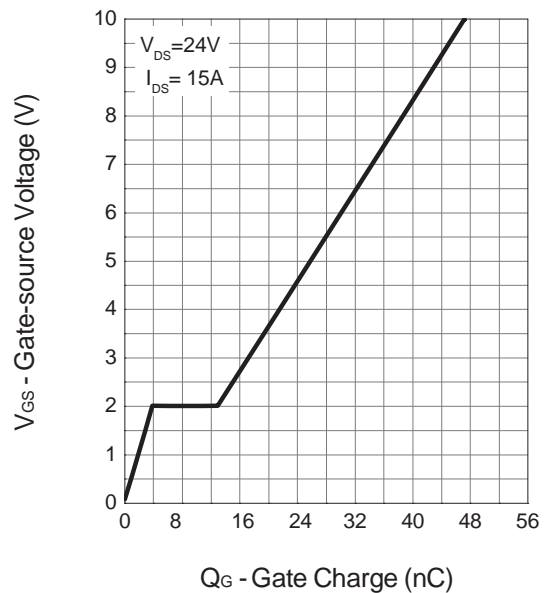
Source-Drain Diode Forward



Capacitance

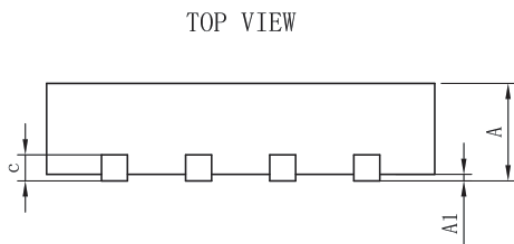
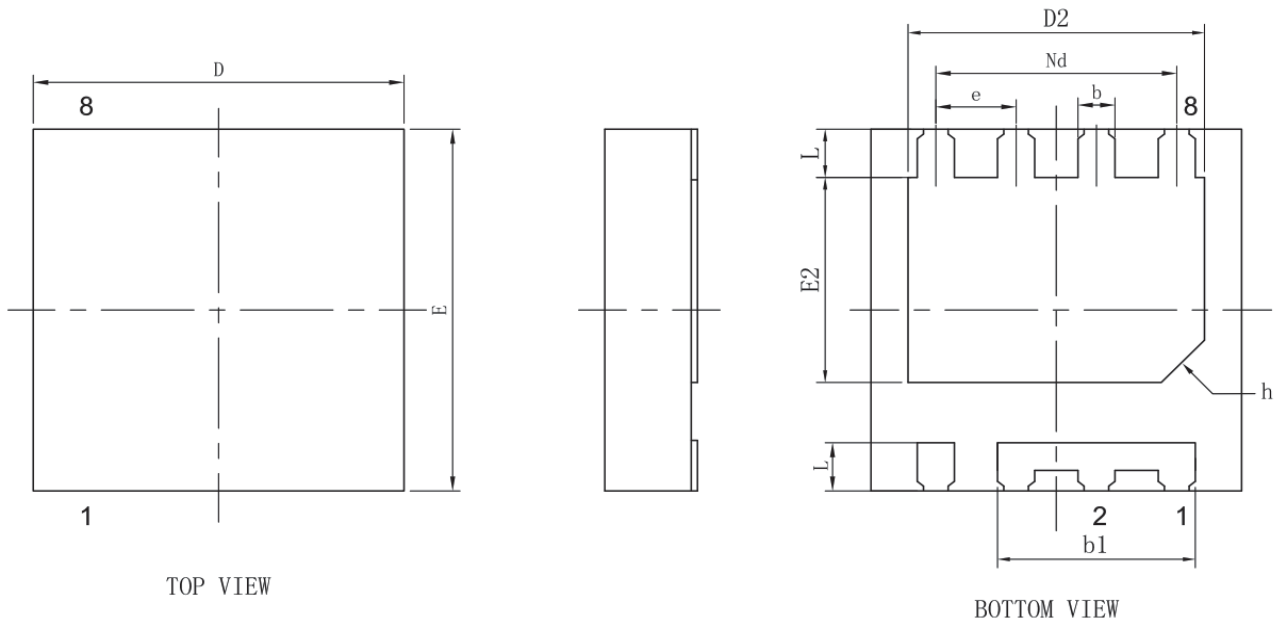


Gate Charge



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

