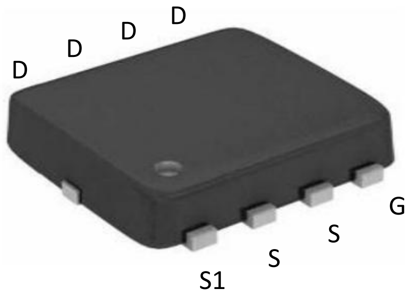
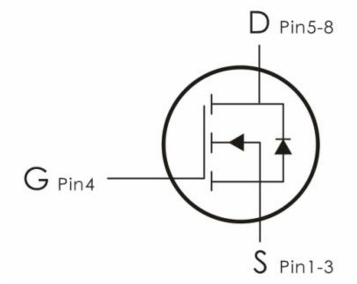
Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.





Features:

1) V_{DS}=100V,I_D=10A,$R_{DS(ON)}$<125mΩ @V_{GS}=10V
2) Improved dv/dt capability
3) Fast switching
4) 100% EAS Guaranteed
5) Green Device Available.

Absolute Maximum Ratings: (Tc=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current-Continuous-T_C=25℃	10	A
	Continuous Drain Current-Continuous-T_C=100℃	6.5	A
I_{DM}	Drain Current – Pulsed[1]	40	A
EAS	Single Pulse Avalanche Energy[2]	3.8	mJ
P_D	Power Dissipation -T_C=25℃	20	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	6.3	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
ZH130NG	H130N	DFN3*3-8

Electrical Characteristics： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV$_{DSS}$	Drain-Sourtce Breakdown Voltage	V$_{GS}$=0V,I$_D$=250μA	100	---	---	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{GS}$=0V, V$_{DS}$=100V	---	---	1	μA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0A	---	---	±100	nA
On Characteristics						
V$_{GS(th)}$	GATE-Source Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250μA	1	1.5	2.5	V
R$_{DS(ON)}$	Drain-Source On Resistance^3	V$_{GS}$=10V,I$_D$=5A	---	92	125	mΩ
		V$_{GS}$=4.5V,I$_D$=3A	---	98	137	
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{DS}$=25V, V$_{GS}$=0V, f=1MHz	---	811	---	pF
C$_{oss}$	Output Capacitance		---	50	---	
C$_{rss}$	Reverse Transfer Capacitance		---	35	---	
Switching Characteristics						
t$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=50V , V$_{GS}$=10V , R$_G$=1.8Ω ,I$_D$=3A	---	7	---	ns
t$_r$	Rise Time		---	5	---	ns
t$_{d(off)}$	Turn-Off Delay Time		---	16	---	ns
t$_f$	Fall Time		---	6	---	ns
Q$_g$	Total Gate Charge	V$_{DS}$=50V , V$_{GS}$=10V , I$_D$=2A	---	12	---	nC
Q$_{gs}$	Gate-Source Charge		---	2.2	---	nC
Q$_{gd}$	Gate-Drain “Miller” Charge		---	2.5	---	nC
Drain-Source Diode Characteristics						
I$_S$	Continuous Source Current	VG=VD=0V	---	---	10	A
V$_{SD}$	Forward on voltage	I$_S$=10A,V$_{GS}$=0V	---	---	1.2	V

Trr	Body Diode Reverse Recovery Time	IF=3A, dI/dt=100A/µs	---	21	---	nS
Qrr	Body Diode Reverse Recovery Charge		---	21	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25℃, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω, I_{AS}=3.9A
3. Pulse Test: Pulse Width≤300µs, Duty Cycle≤0.5%

Typical Characteristics： (T_C=25℃ unless otherwise noted)

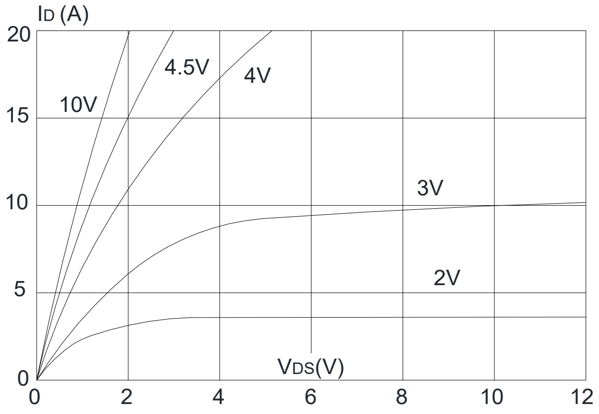


Figure1: Output Characteristics

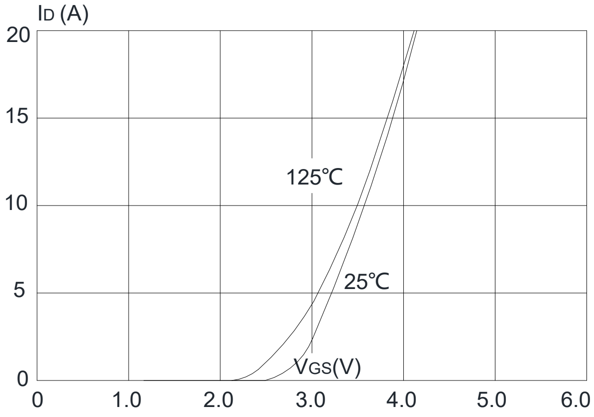


Figure 2: Typical Transfer Characteristics

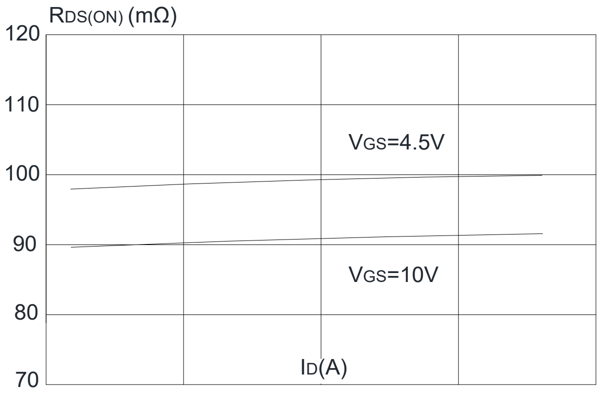


Figure 3: On-resistance vs. Drain Current

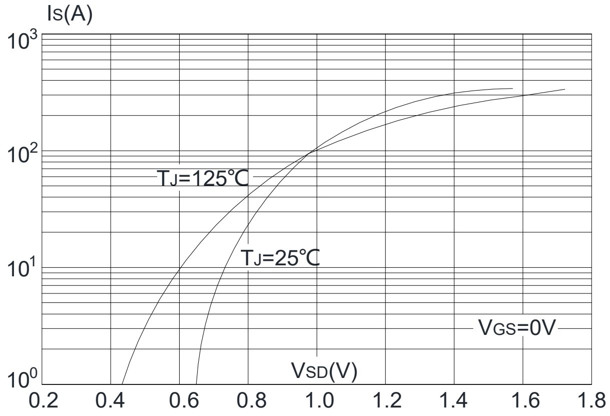


Figure 4: Body Diode Characteristics

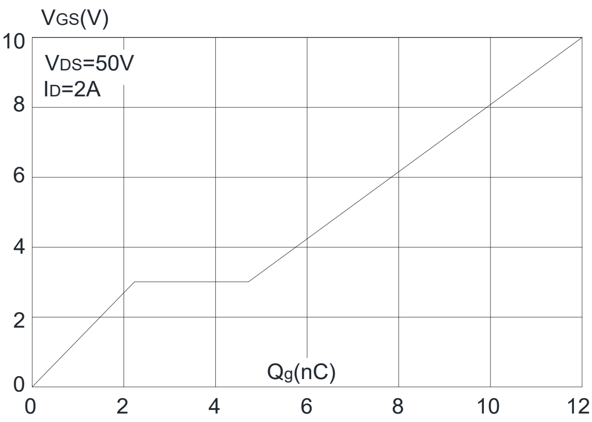


Figure 5: Gate Charge Characteristics

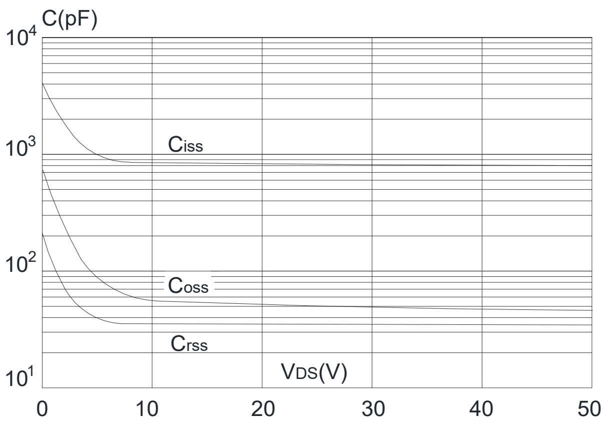


Figure 6: Capacitance Characteristics

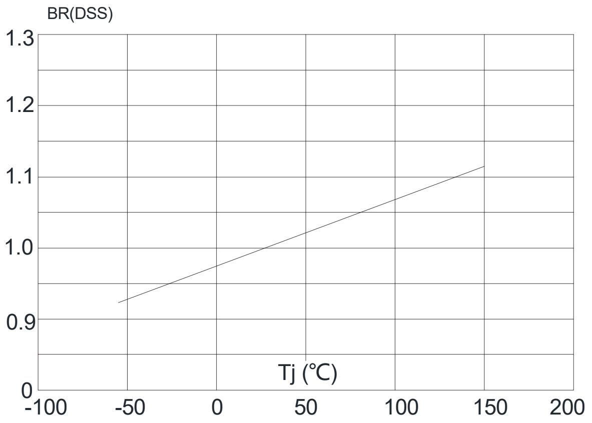


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

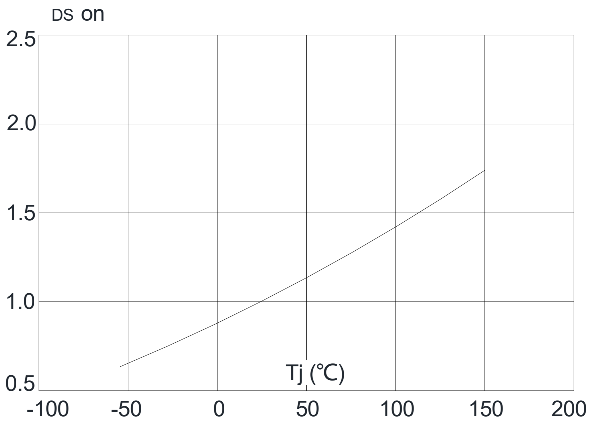


Figure 8: Normalized on Resistance vs. Junction Temperature

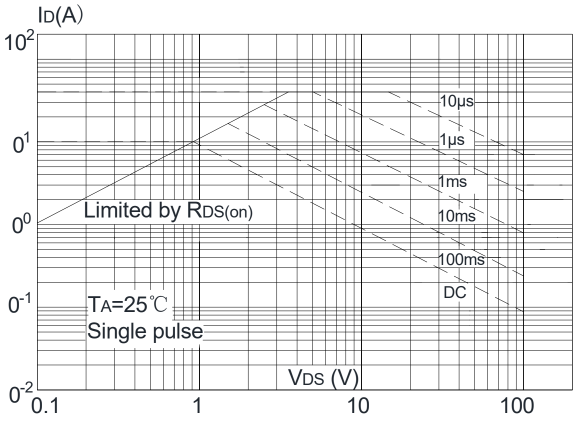


Figure 9: Maximum Safe Operating Area

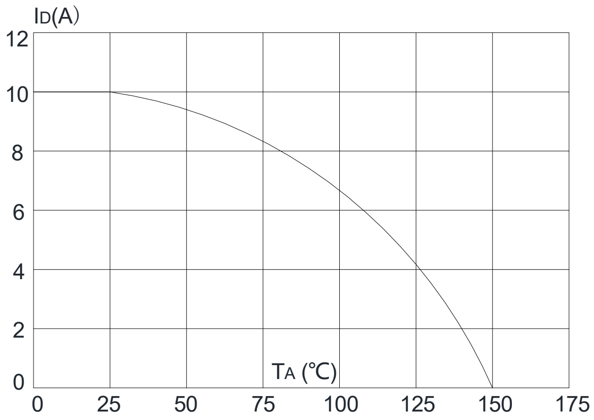


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

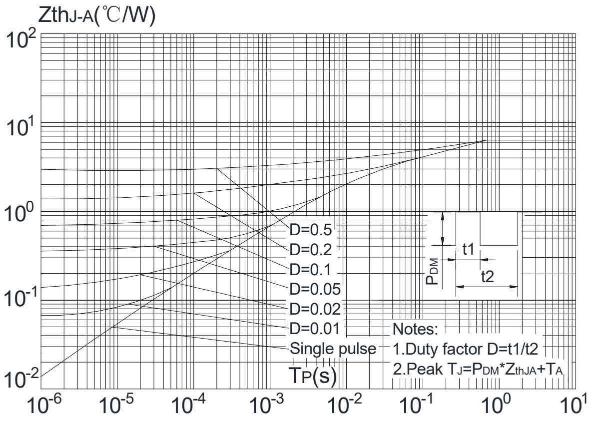


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient