HC100N08

80V N-Channel MOSFET

General Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored 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

V_{DS}	80V
I_D (at V_{GS}=10V)	100A
$R_{DS(ON)}$ (at V_{GS}=10V)	6.0mΩ(Typ)

100% UIS TESTED!
100% ΔVds TESTED!

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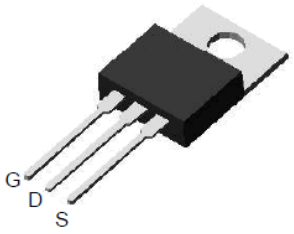
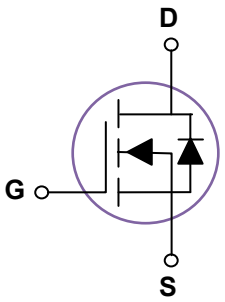




Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±25	V
Drain Current-Continuous	TC=25°C	I_D	100	A
	TC=100°C	I_D	63	A
Maximum Power Dissipation		P_D	150	W
Single pulse avalanche energy(1)		E_{AS}	660	mJ
Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta Jc}$		1.1	℃ /W
Thermal Resistance unction-to-Ambient	$R_{\theta JA}$		62	℃ /W

Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	80			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2.0	3.0	4.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A		6.0	7.0	mΩ
DYNAMIC PARAMETERS						
C_{lss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, F=1.0MHz		5910		pF
C_{oss}	Output Capacitance			266		pF
C_{rss}	Reverse Transfer Capacitance			284		pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=40V,I_D=1A, V_{GS}=10V, R_G=6Ω		30		nS
t_r	Turn-on Rise Time			50		nS
$t_{d(off)}$	Turn-Off Delay Time			75		nS
t_f	Turn-Off Fall Time			21		nS
Q_g	Total Gate Charge	V_{DS}=40V,I_D=10A, V_{GS}=10V		130		nC
Q_{gs}	Gate-Source Charge			25		nC
Q_{gd}	Gate-Drain Charge			48		nC
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_{SD}=10A		0.72	1.4	V
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		2.0		Ω

Note：

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V,V_{GS}=10V,L=0.5mH,IAS=53A, Starting TJ=25℃
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

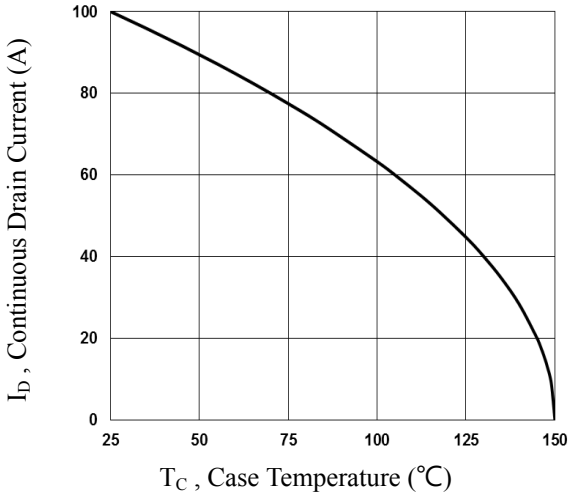


Fig.1 Continuous Drain Current vs. T_C

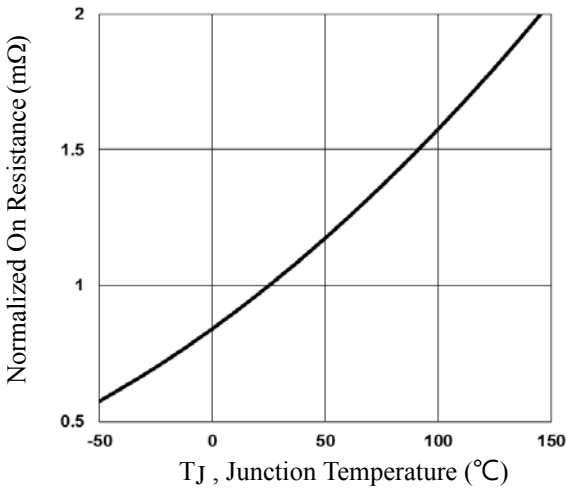


Fig.2 Normalized RDSON vs. T_J

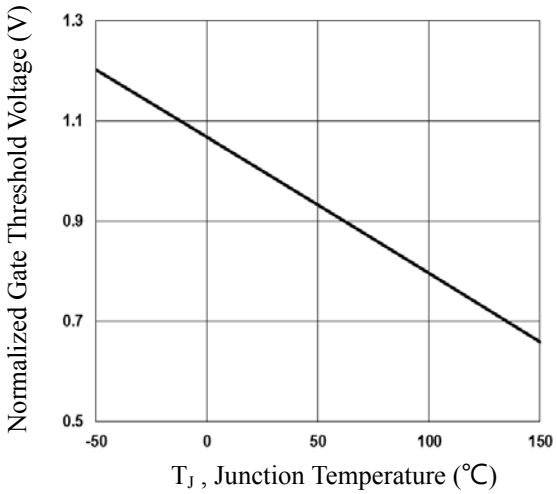


Fig.3 Normalized Vth vs. T_J

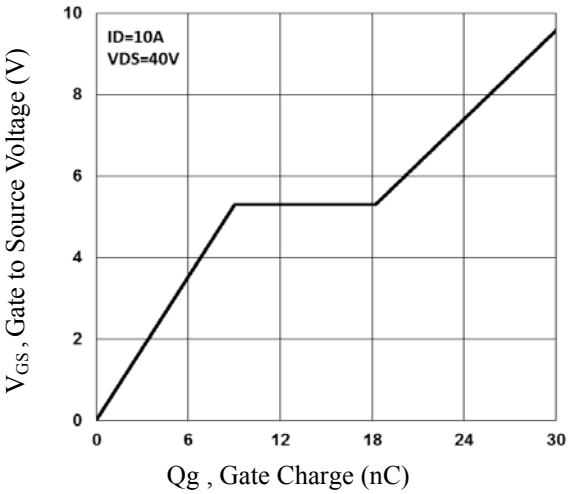


Fig.4 Gate Charge Characteristics

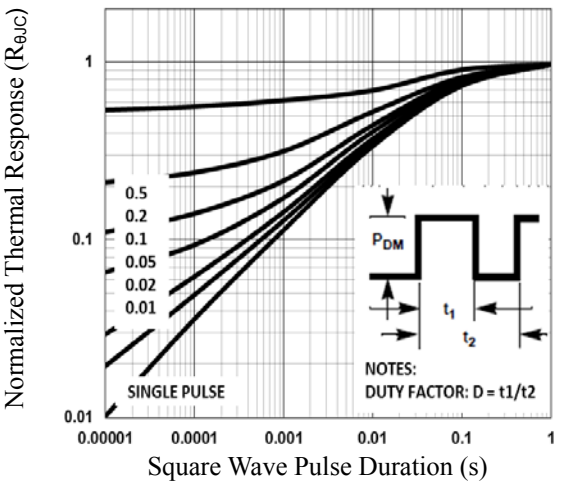


Fig.5 Normalized Transient Impedance

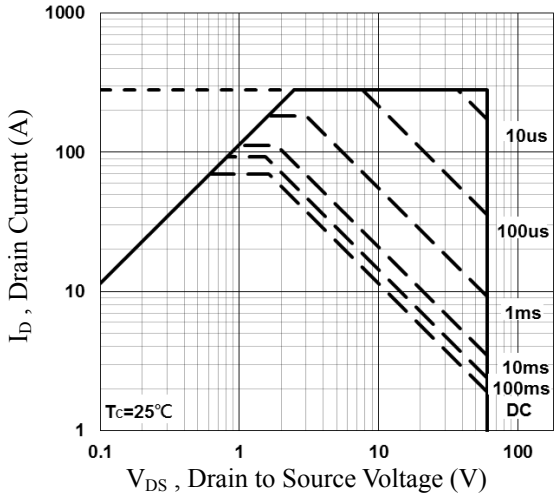


Fig.6 Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

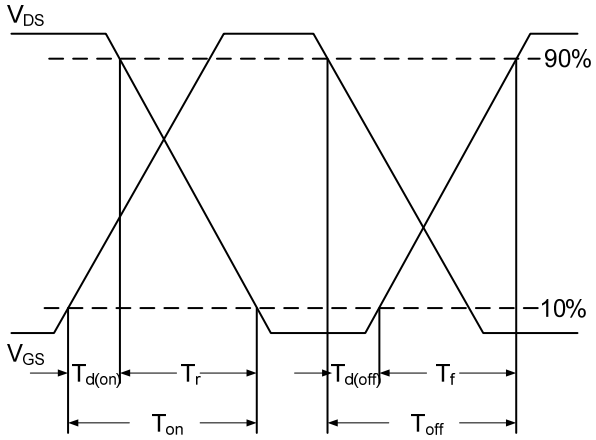


Fig.7 Switching Time Waveform

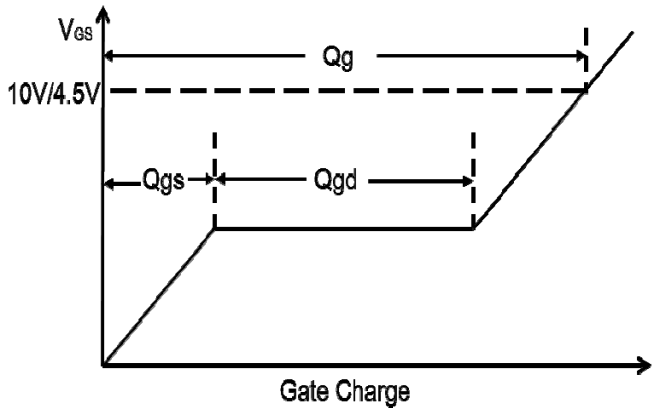
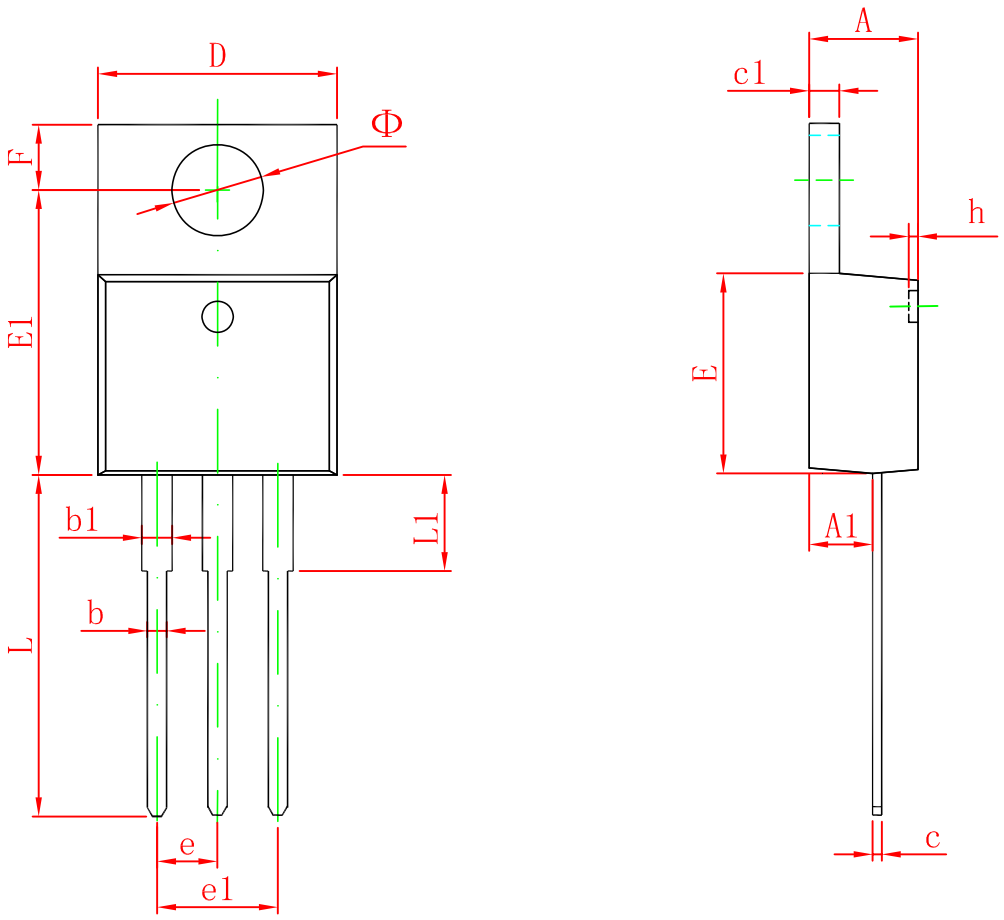


Fig.8 Gate Charge Waveform

TO220 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155