

HM08P20A

N-Channel Enhancement Mode MOSFET with PNP Transistor

➤ Features

N-Channel

VDS	VGS	RDSON Typ.	ID
20V	±8V	255mR@4V5	0.8A
		390mR@2V5	

PNP Transistor

VCE	VBE	VCESAT Typ.	IC
-40V	-6V	-200mV	-1A

➤ Description

HM08P20A combines an N-Channel enhancement mode power MOSFET which is produced with high cell density and a Media Power PNP Transistor. The tiny and thin outline saves PCB consumption.

➤ Applications

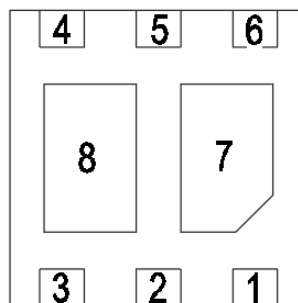
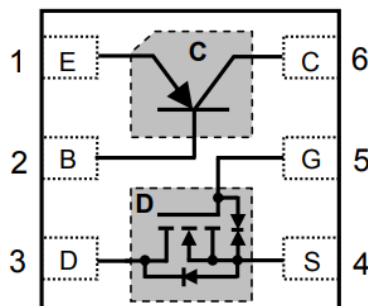
- Li-Battery Charging
- Other power management in portable

➤ Ordering Information

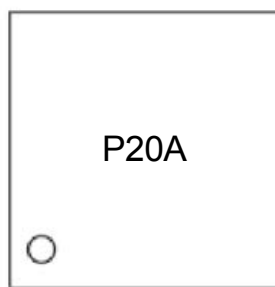
Device	Package	Shipping
HM08P20A	DFN2X2	3000/Reel

➤ Pin configuration

Top view



Bottom View



Marking

➤ **Absolute Maximum Ratings**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Unit
N-MOS			
V_{DSS}	Drain-to-Source Voltage	20	V
V_{GSS}	Gate-to-Source Voltage	± 8	V
I_D	Continuous Drain Current	0.8	A
I_{DM}	Pulsed Drain Current	3	A
PNP Transistor			
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current	-1	A
I_{CM}	Pulsed Collector Current	-2	A
Power Dissipation and Temperature			
P_D	Power Dissipation	1.1	W
T_A	Operation Temperature Range	-40 to 85	$^{\circ}\text{C}$
T_L	Lead Temperature	260	$^{\circ}\text{C}$
T_J	Operation junction temperature	-55 to 150	$^{\circ}\text{C}$
T_{STG}	Storage temperature range	-55 to 150	$^{\circ}\text{C}$

➤ **Thermal Resistance Ratings**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

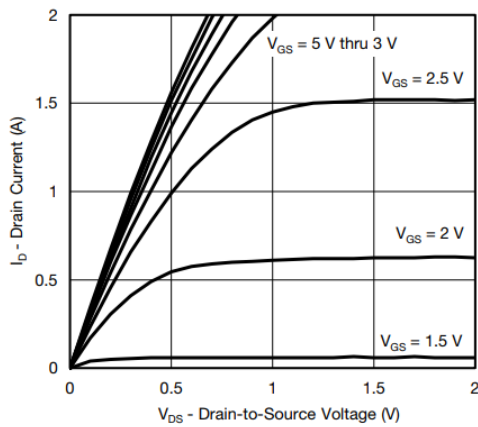
Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance	115	$^{\circ}\text{C/W}$

➤ **Electronics Characteristics**($T_A=25^{\circ}\text{C}$ unless otherwise noted)

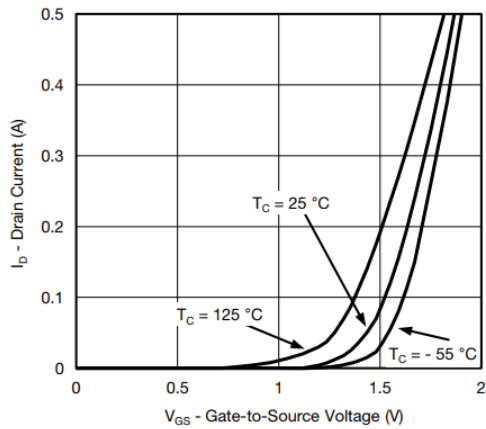
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
N-Channel Enhancement Mode MOSFET						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu A$	0.35	0.6	1	V
$R_{DS(on)}$	Drain-Source On- Resistance	$V_{GS}=4.5V$, $I_D=0.5A$		255	450	mR
		$V_{GS}=2.5V$, $I_D=0.5A$		390	765	
		$V_{GS}=1.8V$, $I_D=0.35A$		520	850	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V$, $V_{GS}=0V$			1	μA
I_{GSS}	Gate-Source leak current	$V_{GS}=\pm 8V$, $V_{DS}=0V$			± 10	μA
V_{SD}	Forward Voltage	$V_{GS}=0V$, $I_S=1A$			1.3	V
G_{FS}	Transconductance	$V_{DS}=5V$, $I_D=0.5A$		2.2		S
C_{iss}	Input Capacitance	$V_{DS}=16V$, $V_{GS}=0V$, $f=200KHZ$		130		pF
C_{oss}	Output Capacitance			20		
C_{rss}	Reverse Transfer Capacitance			16		
$T_{D(ON)}$	Turn-on delay time	$V_{DS}=6V$, $V_{GS}=4.5V$, $R_L=6R$, $R_G=6R$, $I_D=0.8A$		6		ns
T_r	Turn-on rise time			23		
$T_{D(OFF)}$	Turn-off delay time			42		
T_f	Turn-off fall time			78		

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
PNP Transistor						
BVCBO	Collector-Base Breakdown Voltage	IC=-50uA IE=0	-40			V
BVCEO	Collector-Emitter Breakdown Voltage	IC=-1mA IB=0	-40			V
BVEBO	Emitter-Base Breakdown Voltage	IE=-50uA IC=0	-6			V
ICBO	Collector cut off current	VCB=-20V IE=0			-0.1	uA
IEBO	Emitter cut off current	VEB=-4V IC=0			-0.1	uA
HFE	DC Current Gain	VCE=-2V IC=-0.5A	100		360	
VCESAT	Collector-Emitter Saturation Voltage	IC=-0.8A IB=-80mA		-0.2	-0.5	V
VBESAT	Base-Emitter Saturation Voltage	IC=-0.8A IB=-80mA			-1.2	V
f _T	Transition frequency	VCE=-6V, IE=-20mA f=30MHz	150			MHz

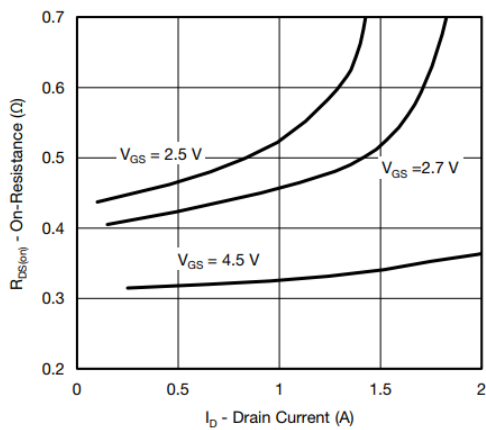
➤ **N-Channel Typical Characteristics**($T_A=25^\circ\text{C}$ unless otherwise noted)



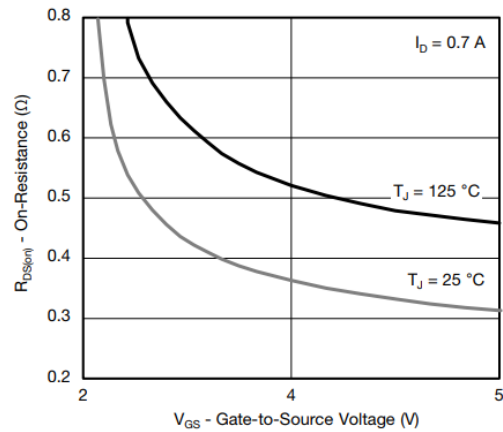
Output Characteristics



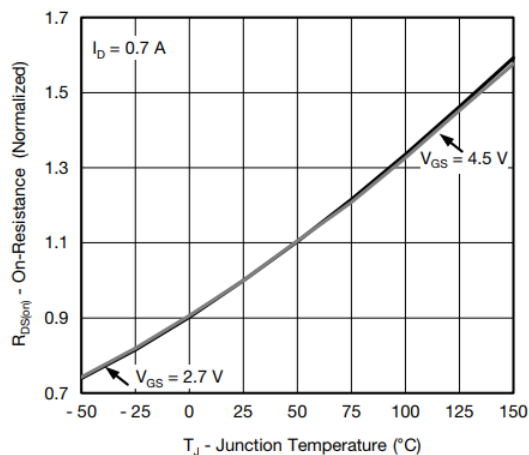
Transfer Characteristics



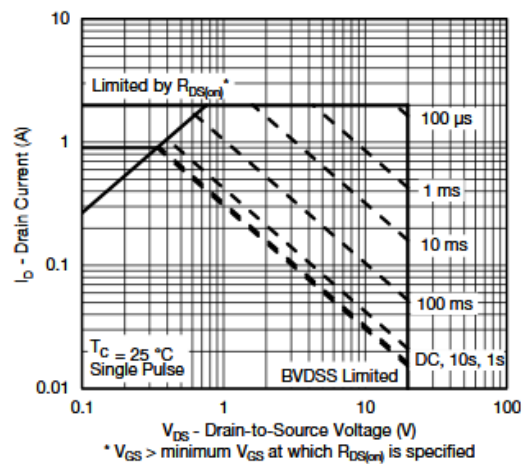
On-Resistance vs. Drain Current and Gate Voltage



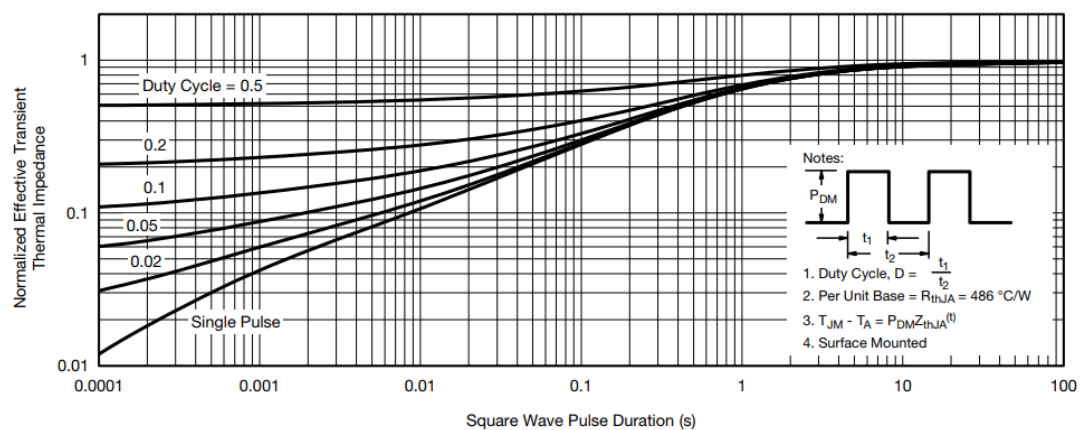
On-Resistance vs. Gate-to-Source Voltage



On-Resistance vs. Junction Temperature

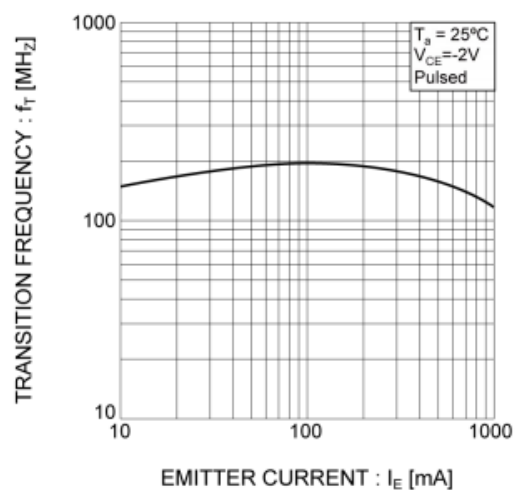
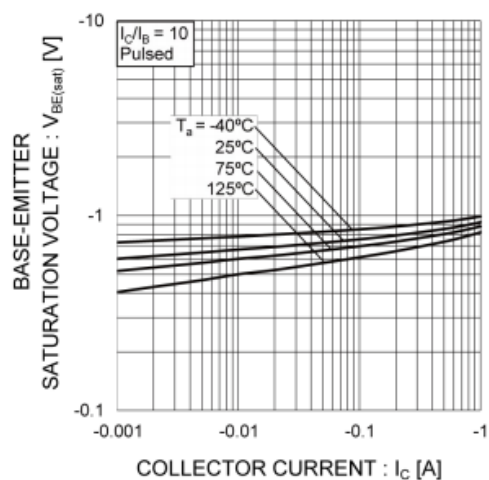
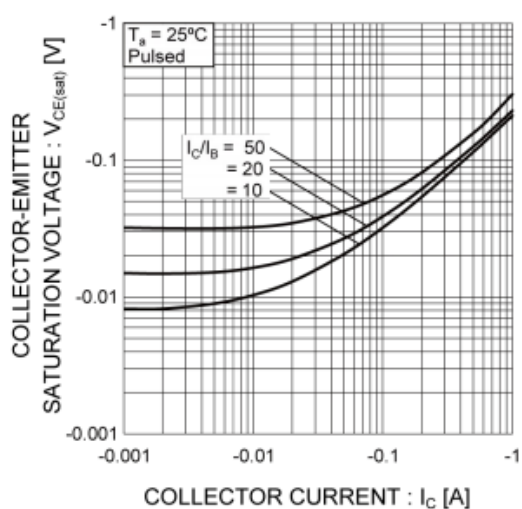
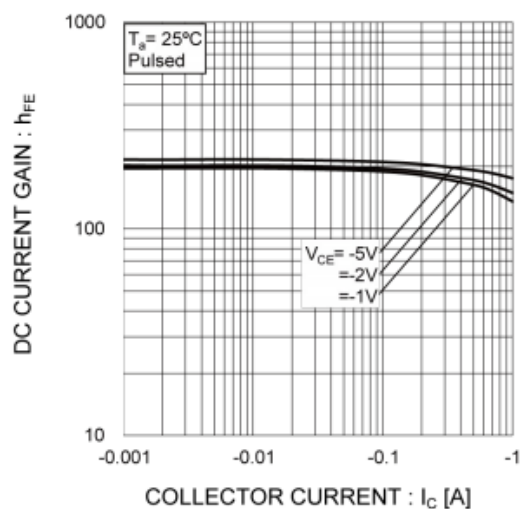
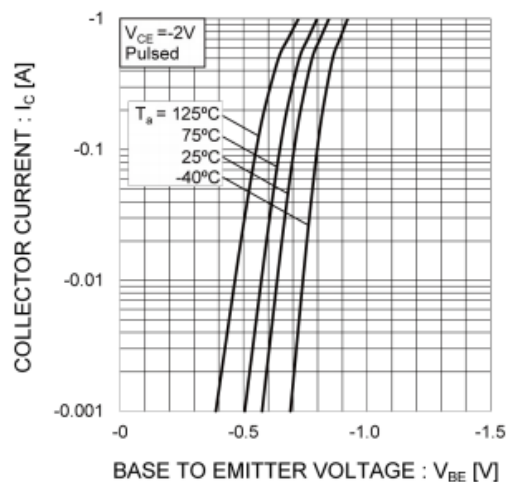
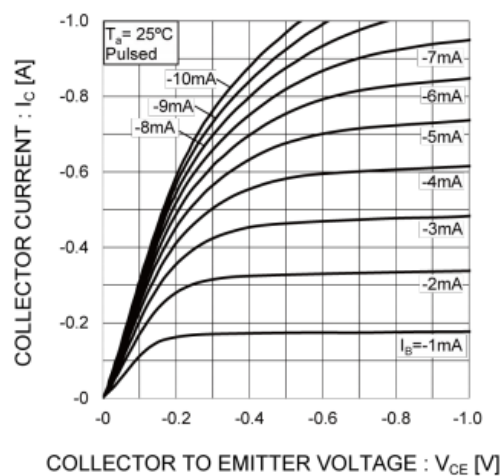


Safe Operating Area, Junction-to-Ambient

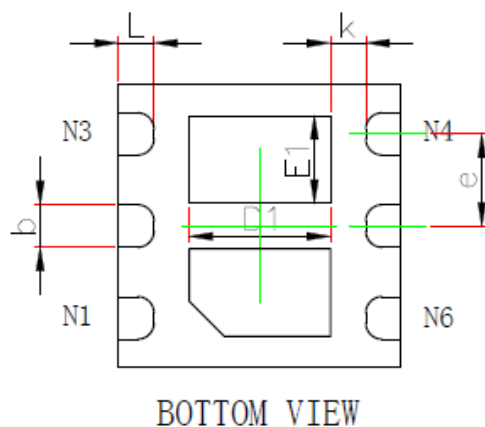
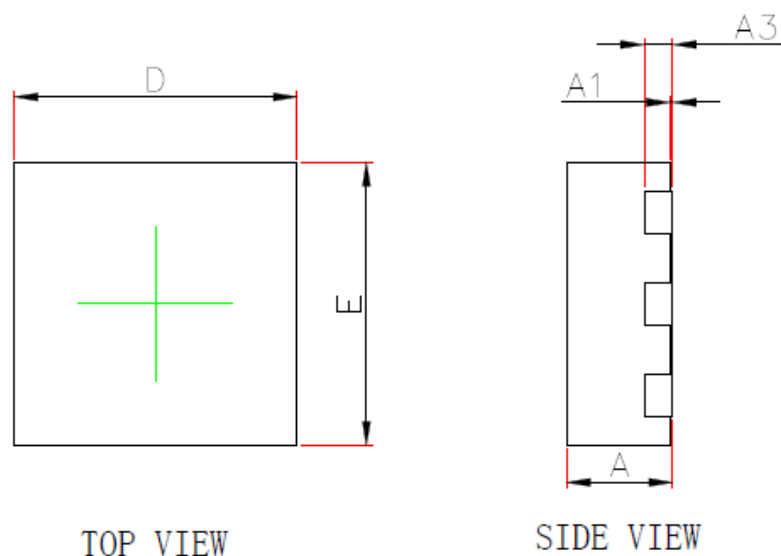


Normalized Thermal Transient Impedance, Junction-to-Ambient

➤ PNP Transistor Typical Performance Characteristics



➤ Package Information



DFN2X2-8L

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
k	0.200MIN.		0.008MIN.	
L	0.200	0.300	0.008	0.012