

## HM08P22C

### N-Channel Enhancement Mode MOSFET with PNP Transistor

#### ➤ Features

##### N-Channel

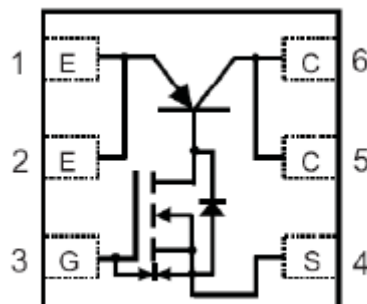
VDS	VGS	RDS(on) Typ.	ID
20V	±8V	255mR@4V5	0.8A
		390mR@2V5	

##### PNP Transistor

VCE	VBE	VCESAT Typ.	IC
-40V	-6V	-200mV	-3A

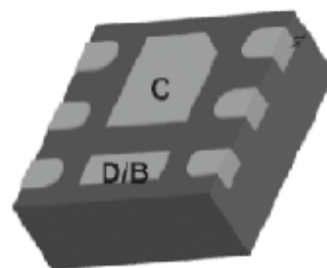
#### ➤ Pin configuration

Top view



#### ➤ Description

HM08P22C 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.



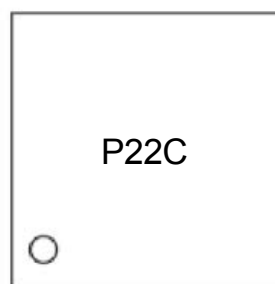
Bottom View

#### ➤ Applications

- Li-Battery Charging
- Other power management in portable

#### ➤ Ordering Information

Device	Package	Shipping
HM08P22C	DFN2X2-6L	3000/Reel



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	$\pm 8$	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	-3	A
$I_{CM}$	Pulsed Collector Current	-6	A
Power Dissipation and Temperature			
$P_D$	Power Dissipation	2.6	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)

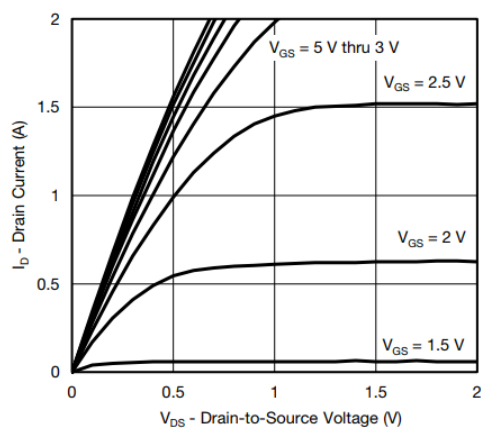
Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance	54	$^{\circ}\text{C/W}$

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

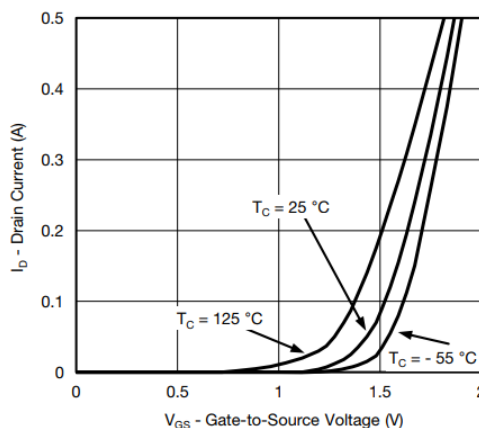
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
N-Channel Enhancement Mode MOSFET						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu A$	0.35	0.6	1	V
$R_{DS(on)}$	Drain-Source On- Resistance	$V_{GS}=4.5V$ , $I_D=0.5A$		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	$\mu A$
$I_{GSS}$	Gate-Source leak current	$V_{GS}=\pm 8V$ , $V_{DS}=0V$			$\pm 10$	$\mu A$
$V_{SD}$	Forward Voltage	$V_{GS}=0V$ , $I_S=0.1A$			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			24		
$T_{D(OFF)}$	Turn-off delay time			42		
$T_f$	Turn-off fall time			80		

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		350	
VCESAT	Collector-Emitter Saturation Voltage	IC=-0.8A IB=-80mA		-0.15	-0.2	V
VBESAT	Base-Emitter Saturation Voltage	IC=-0.8A IB=-80mA			-1.2	V
f <sub>T</sub>	Transition frequency	VCE=-6V , IE=-0.02A f=30MHz	50	80		MHz

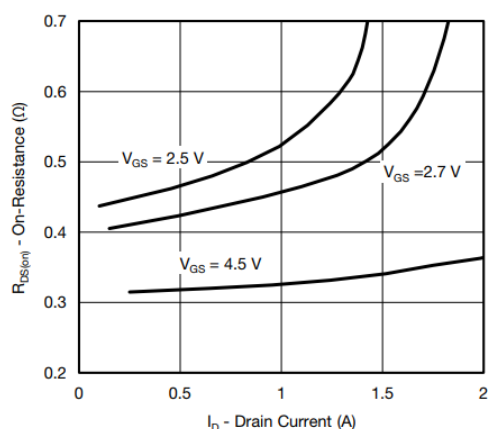
➤ **N-Channel Typical Characteristics**( $T_A=25^\circ\text{C}$  unless otherwise noted)



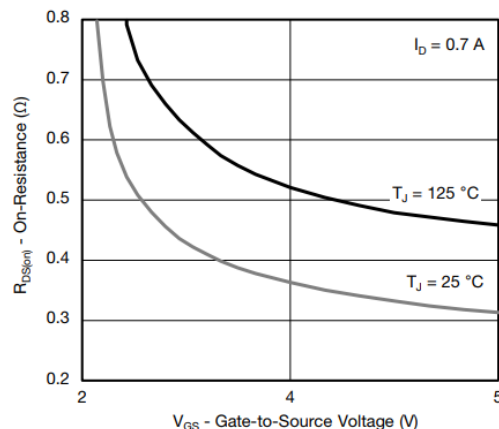
**Output Characteristics**



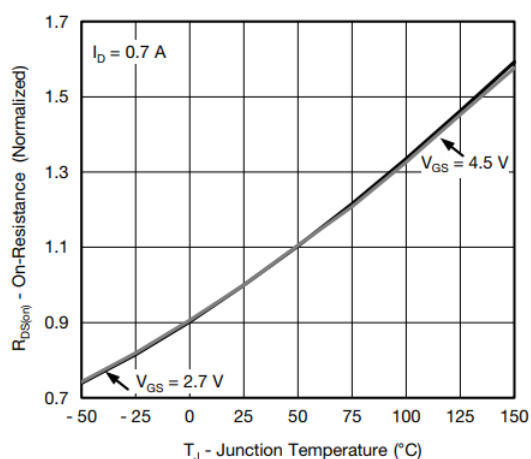
**Transfer Characteristics**



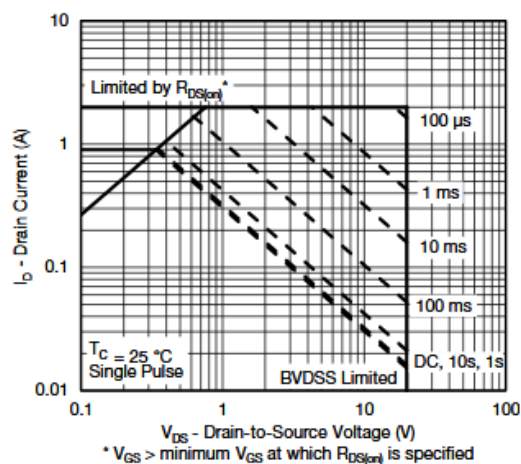
**On-Resistance vs. Drain Current and Gate Voltage**



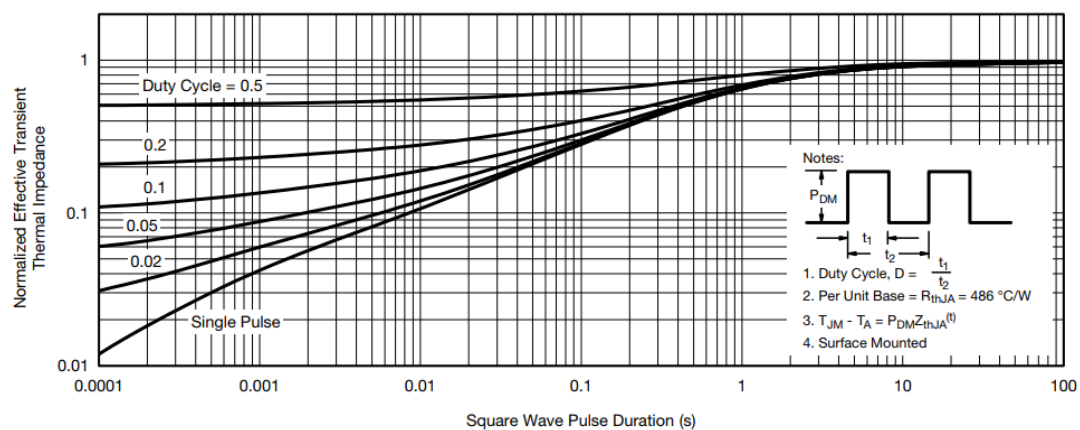
**On-Resistance vs. Gate-to-Source Voltage**



**On-Resistance vs. Junction Temperature**

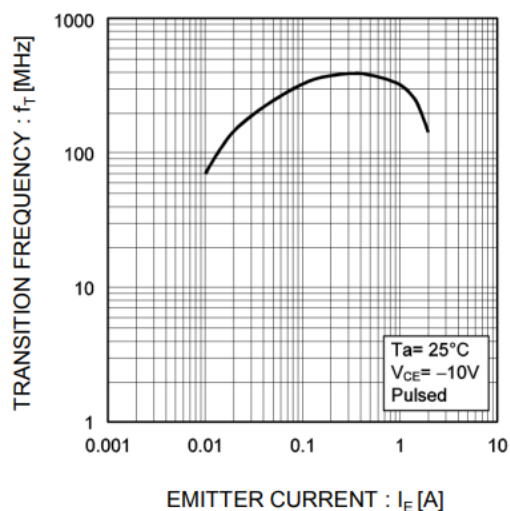
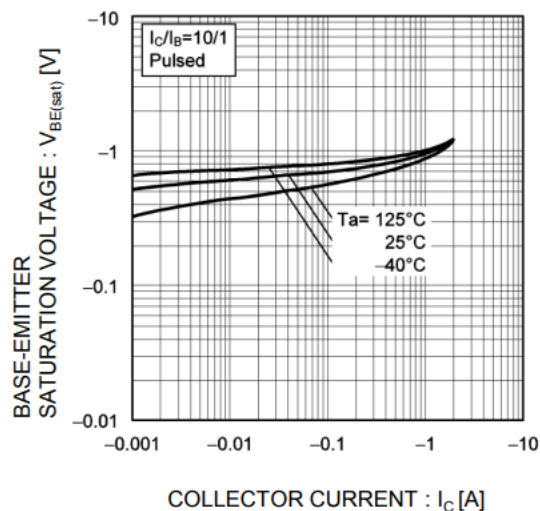
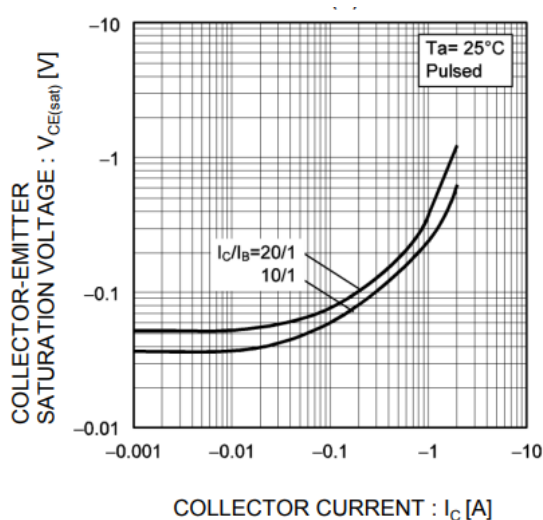
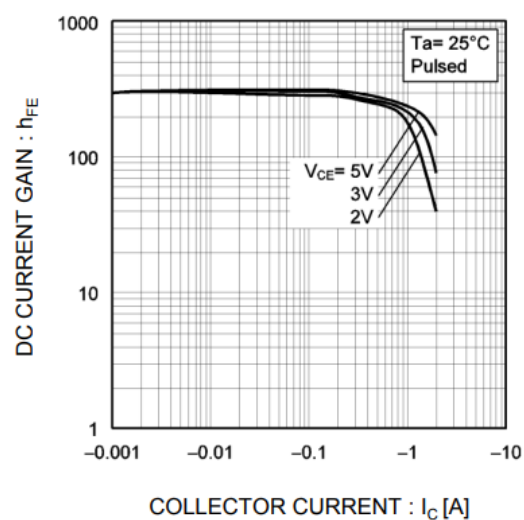
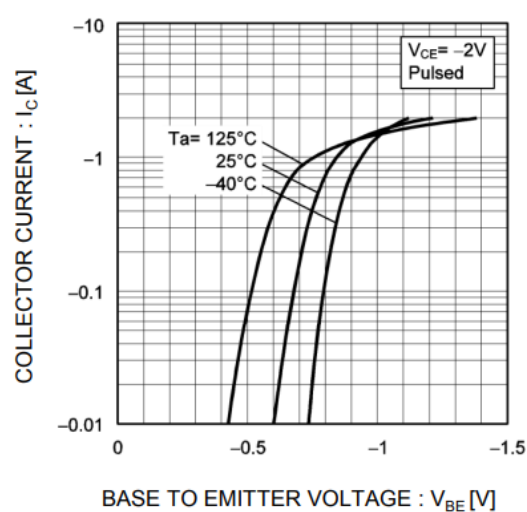
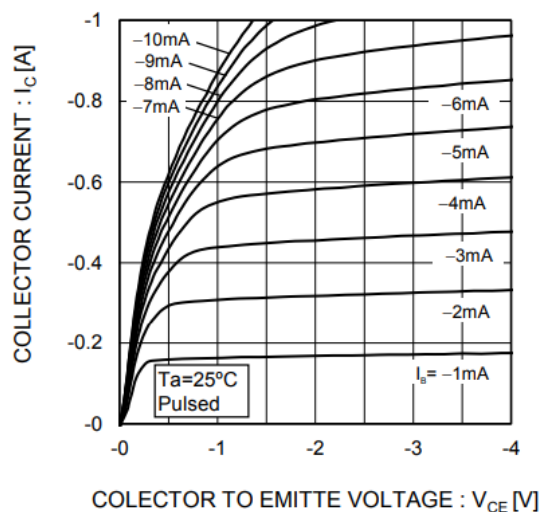


**Safe Operating Area, Junction-to-Ambient**

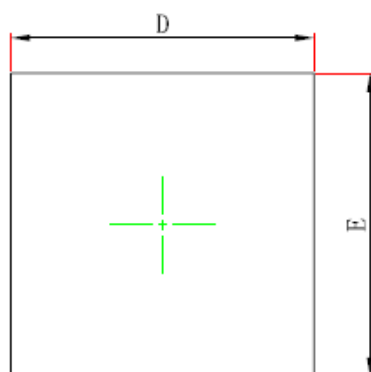


Normalized Thermal Transient Impedance, Junction-to-Ambient

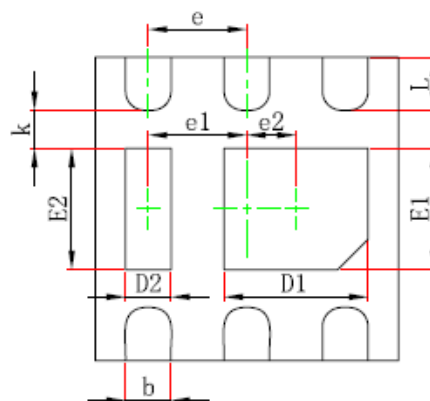
➤ PNP Transistor Typical Performance Characteristics



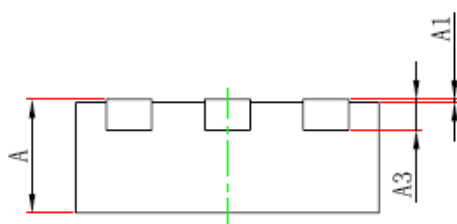
➤ Package Information



**Top View**



**Bottom View**



**Side View**

DFN2X2-6L

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.032	0.032/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.850	1.050	0.033	0.041
E1	0.700	0.900	0.028	0.035
D2	0.200	0.400	0.008	0.016
E2	0.700	0.900	0.028	0.035
e1	0.650TYP.		0.026TYP.	
e2	0.325TYP.		0.013TYP.	
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.300	0.400	0.012	0.016