

## HM10SDN06Q

### Dual Asymmetric N-Channel Enhancement Mode MOSFET

#### ➤ Features

VDS	VGS	RDS(on) Typ.	ID
6V	±20V	34mR@10V	10A
		46mR@4V5	

#### ➤ Description

This device uses advanced trench technology to provide excellent RDS(on) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

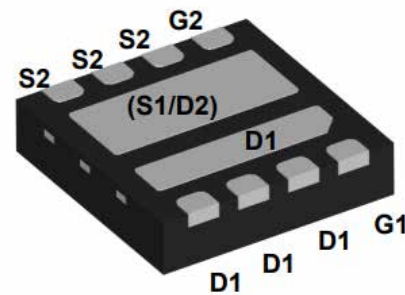
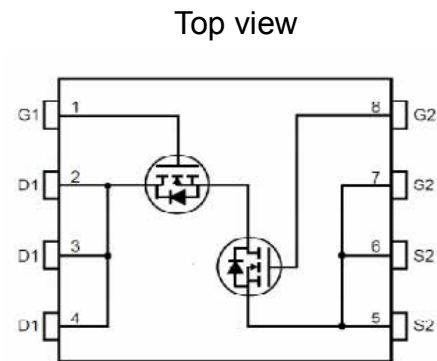
#### ➤ Applications

- Power Management in notebook computer
- Portable Equipment
- Battery Powered Systems

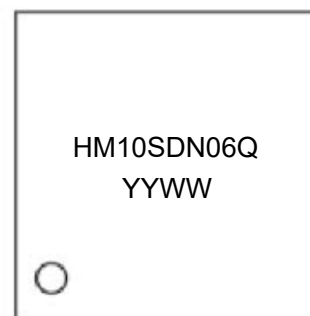
#### ➤ Ordering Information

Device	Package	Shipping
HM10SDN06Q	DFN3X3	5000/Reel

#### ➤ Pin configuration



Bottom View



Marking

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

Symbol	Parameter	Ratings	Unit	
$V_{DSS}$	Drain-to-Source Voltage	6	V	
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current	$TC=25^{\circ}\text{C}$	10	A
		$TC=100^{\circ}\text{C}$	7	A
$I_{DM}$	Pulsed Drain Current <sup>b</sup>	30	A	
$I_{DSM}$	Continuous Drain Current a	$TA=25^{\circ}\text{C}$	5.6	A
		$TA=70^{\circ}\text{C}$	3.6	A
$P_D$	Power Dissipation <sup>c</sup>	$TC=25^{\circ}\text{C}$	25	W
		$TC=100^{\circ}\text{C}$	10	W
$P_{DSM}$	Power Dissipation <sup>a</sup>	$TA=25^{\circ}\text{C}$	2.5	W
		$TA=70^{\circ}\text{C}$	0.9	W
$I_{AS}$	Avalanche Current	10	A	
$E_{AS}$	Avalanche Energy, $L=0.05\text{mH}$	16	mJ	
$T_J$	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	Typical	Maximum	Unit
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>		55	$^{\circ}\text{C}/\text{W}$
$R_{\theta JC}$	Junction-to-Case Thermal Resistance		6	

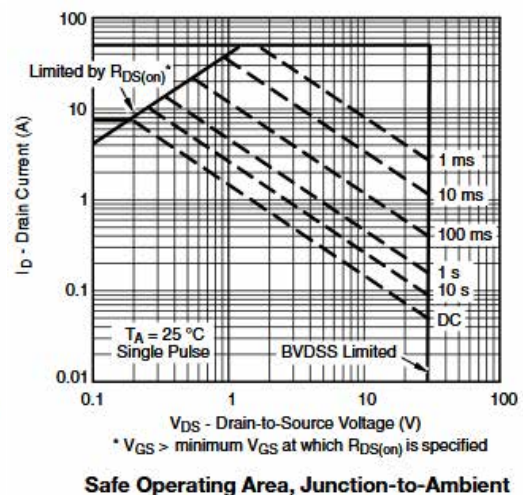
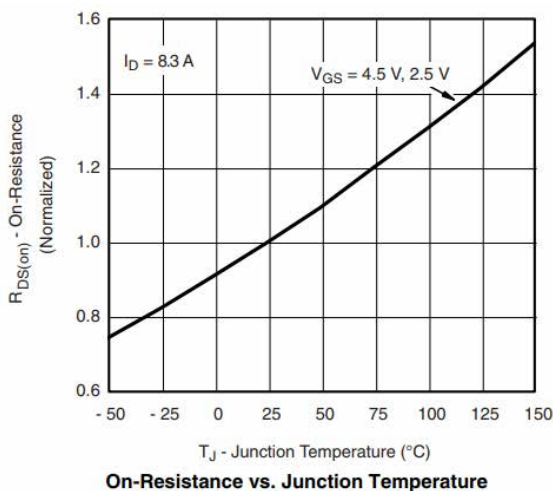
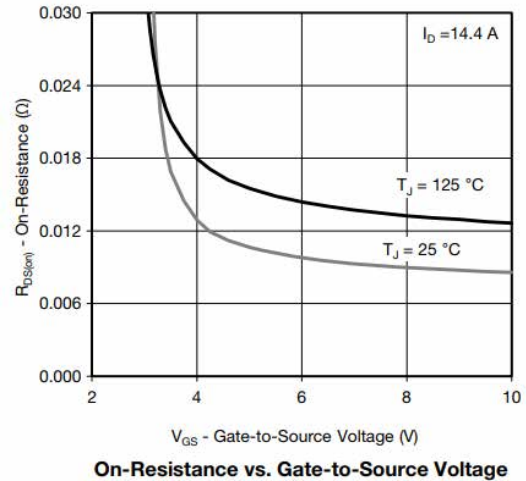
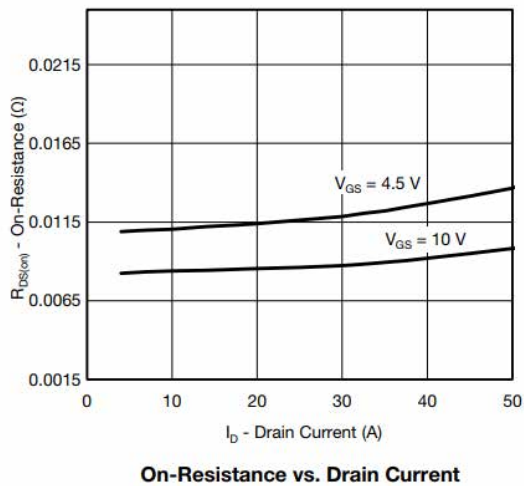
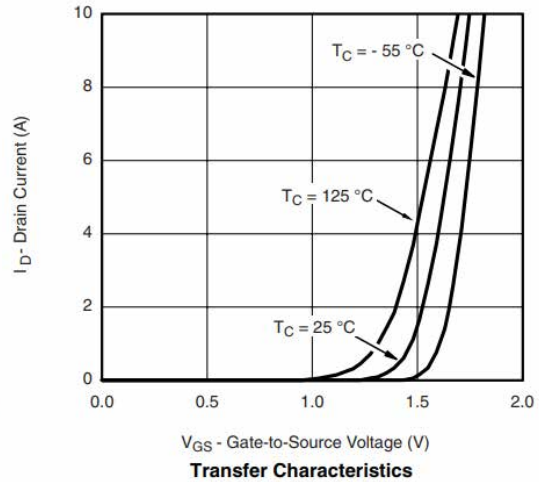
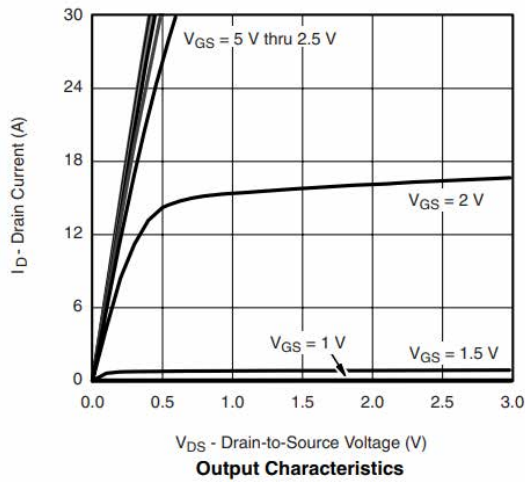
Note:

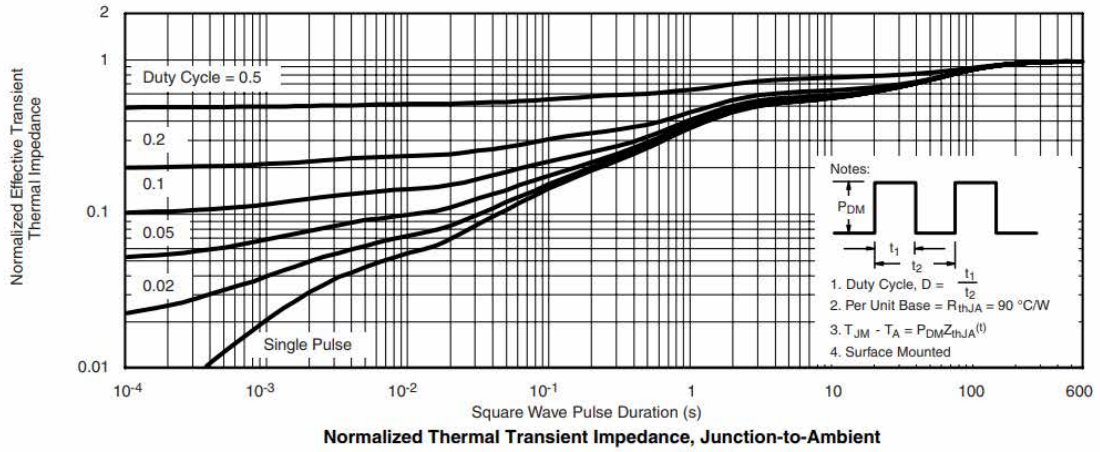
- The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz.copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user's specific board design. The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.
- Repetitive rating, pulse width limited by junction temperature.
- The power dissipation  $P_D$  is based on  $T_J(\text{MAX})=150^{\circ}\text{C}$ , using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

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

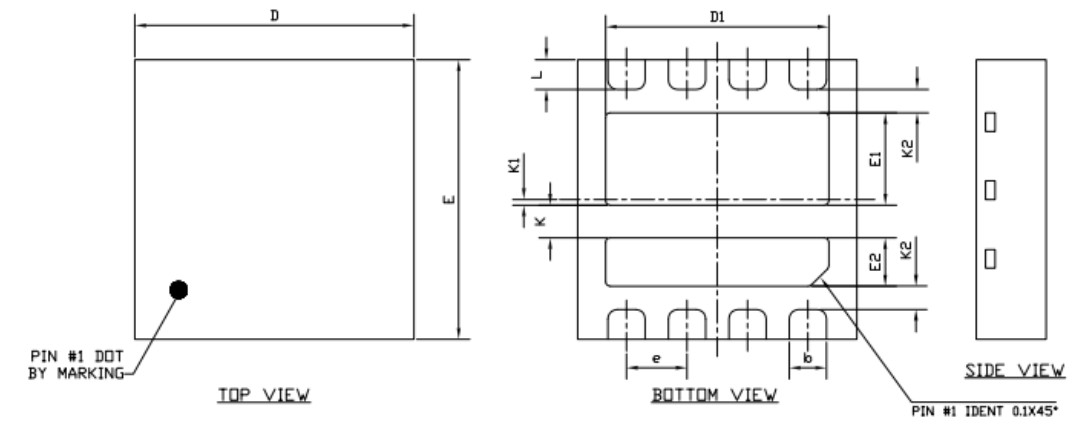
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	6			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.6	V
$R_{DS(on)}$	Drain-Source On- Resistance	$V_{GS}=10V, I_D=20A$			34	mR
		$V_{GS}=4.5V, I_D=10A$			46	
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=6V, V_{GS}=0V$			1	$\mu A$
$I_{GSS}$	Gate-Source leak current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$V_{SD}$	Forward Voltage	$V_{GS}=0V, I_S=0.5A$		0.8	1.3	V
$G_{FS}$	Transconductance	$V_{DS}=15V, I_D=10A$		55		S
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		650		pF
$C_{oss}$	Output Capacitance			220		
$C_{rss}$	Reverse Transfer Capacitance			105		
$T_{D(ON)}$	Turn-on delay time			12		
$T_r$	Rise time	$V_{GS}=10V,$ $V_{DS}=15V, R_G=3R, R_L=2.3R$		6		ns
$T_{D(OFF)}$	Turn-off delay time			22		
$T_f$	Fall time			9		
$Q_g$	Total Gate charge			18		
$Q_{gs}$	Gate to Source charge	$V_{GS}=10V, V_{DS}=15V, I_D=12A$		2.3		nC
$Q_{gd}$	Gate to Drain charge			3.2		

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





➤ Package Information



DFN3X3

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.032
A1	0.00	---	0.05	0.000	---	0.002
c	0.203 REF.			0.008 REF.		
b	0.35	0.40	0.45	0.014	0.016	0.018
D	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.30	2.40	2.50	0.090	0.094	0.098
E	2.90	3.00	3.10	0.114	0.118	0.122
E1	0.89	0.99	1.09	0.035	0.039	0.043
E2	0.42	0.52	0.62	0.016	0.020	0.024
e	0.65 BSC			0.026 BSC		
L	0.27	0.32	0.37	0.011	0.013	0.015
K	0.35 REF.			0.014 REF.		
K1	0.06 REF.			0.002 REF.		
K2	0.25 REF.			0.010 REF.		