

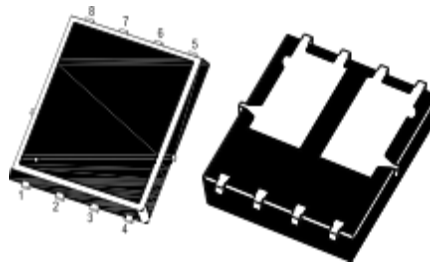
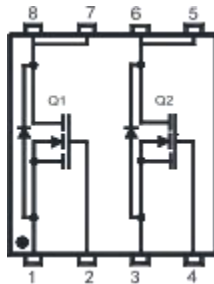
Descriptions

The CTCS085DN06YE is Dual N-Channel Enhancement Mode MOSFET, PDFN5X6-8L plastic package.

Features

- Low $R_{DS(ON)}$
- Surface-mounted package
- Low Gate-Source Threshold Voltage
- Halogen and Antimony Free(HAF), RoHS compliant

Equivalent Circuit & Pinning



Q1:1.Source 2.Gate 7.Drain 8.Drain
Q2:3.Source 4.Gate 5.Drain 6.Drain
DFN5060 Plastic Package

Marking

Model	CTCS085DN06YE
Marking	DM606D050LS

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C = 25^\circ\text{C}$ 54	A
		$T_C = 100^\circ\text{C}$ 37	
Peak Drain Current, Pulsed ¹⁾	I_{DM}	280	A
Single Pulse Avalanche Current	I_{AS}	36	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	65	mJ
Total Power Dissipation $T_C = 25^\circ\text{C}$	P_{tot}	40.5	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 175	°C

Thermal Characteristics (Q1/Q2)

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.7	°C/W
Thermal Resistance from Junction to Ambient ³⁾	$R_{\theta JA}$	62.5	°C/W

1) Pulse Test: Pulse Width $\leq 100 \mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 175^\circ\text{C}$.

2) Limited by $T_{J(MAX)}$, starting $T_J = 25^\circ\text{C}$, $L = 0.1 \text{ mH}$, $R_g = 25 \Omega$, $I_{AS} = 36 \text{ A}$, $V_{GS} = 10 \text{ V}$.

3) Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Electrical Characteristics(Ta=25°C) (Q1/Q2)

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $I_D = 1 \text{ mA}$	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current at $V_{DS} = 48 \text{ V}$	I_{DSS}	-	-	1	μA
Gate Leakage Current at $V_{GS} = \pm 16 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1.2	-	2.5	V
Drain-Source On-State Resistance at $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$ at $V_{GS} = 4.5 \text{ V}$, $I_D = 15 \text{ A}$	$R_{DS(on)}$	- -	6.8 -	8.5 10.5	m Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $V_{DS} = 5 \text{ V}$, $I_D = 15 \text{ A}$	g_{fs}	-	29	-	S
Gate resistance at $V_{GS} = 0 \text{ V}$, $V_{DS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	R_g	-	1	-	Ω
Input Capacitance at $V_{GS} = 0 \text{ V}$, $V_{DS} = 30 \text{ V}$, $f = 1 \text{ MHz}$	C_{iss}	-	1609	-	pF
Output Capacitance at $V_{GS} = 0 \text{ V}$, $V_{DS} = 30 \text{ V}$, $f = 1 \text{ MHz}$	C_{oss}	-	616	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0 \text{ V}$, $V_{DS} = 30 \text{ V}$, $f = 1 \text{ MHz}$	C_{rss}	-	32	-	pF
Gate charge total at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$ A at $V_{DS} = 30 \text{ V}$, $V_{GS} = 4.5 \text{ V}$, $I_D = 20 \text{ A}$	Q_g	- -	36.4 19.3	- -	nC
Gate to Source Charge at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$	Q_{gs}	-	5.8	-	nC
Gate to Drain Charge at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$	Q_{gd}	-	10.5	-	nC
Turn-On Delay Time at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $R_g = 3.3 \Omega$	$t_{d(on)}$	-	14	-	ns
Turn-On Rise Time at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $R_g = 3.3 \Omega$	t_r	-	29	-	ns
Turn-Off Delay Time at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $R_g = 3.3 \Omega$	$t_{d(off)}$	-	14	-	ns
Turn-Off Fall Time at $V_{DS} = 30 \text{ V}$, $V_{GS} = 10 \text{ V}$, $I_D = 20 \text{ A}$, $R_g = 3.3 \Omega$	t_f	-	3	-	ns

Electrical Characteristics(Ta=25°C) (Q1/Q2)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_S = 1\text{ A}$, $V_{GS} = 0\text{ V}$	V_{SD}	-	-	1.3	V
Body-Diode Continuous Current	I_S	-	-	54	A
Body-Diode Continuous Current, Pulsed	I_{SM}	-	-	280	A
Body Diode Reverse Recovery Time at $I_S = 20\text{ A}$, $di/dt = 100\text{ A} / \mu\text{s}$	t_{rr}	-	38	-	ns
Body Diode Reverse Recovery Charge at $I_S = 20\text{ A}$, $di/dt = 100\text{ A} / \mu\text{s}$	Q_{rr}	-	38	-	nC

Electrical Characteristic Curve

Fig. 1 Typical Output Characteristics

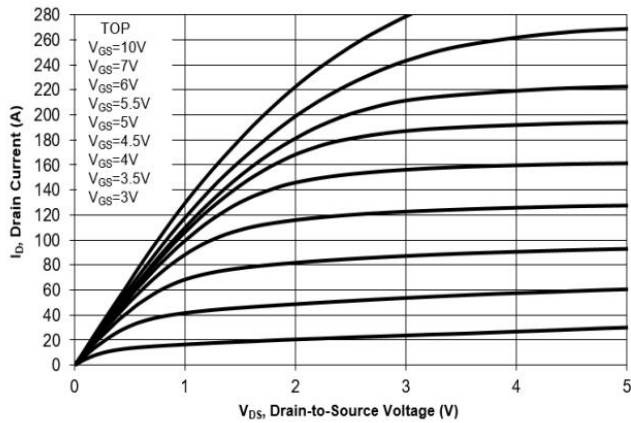


Fig. 2 Typical Transfer Characteristics

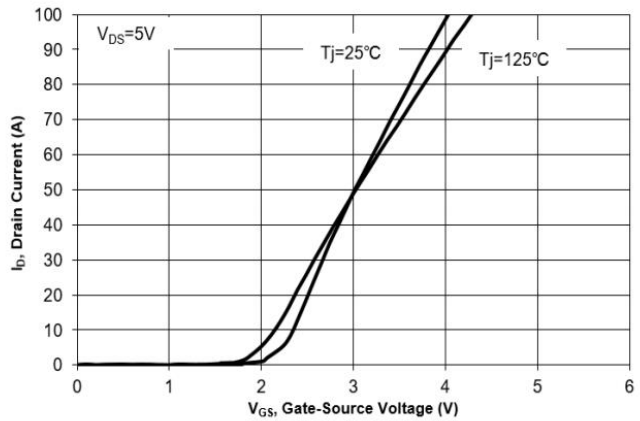


Fig. 3 on-Resistance vs. Drain Current

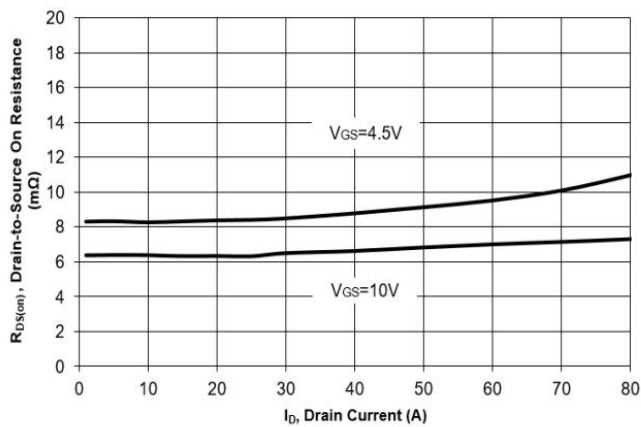


Fig. 4 on-Resistance vs. Gate to Source Voltage

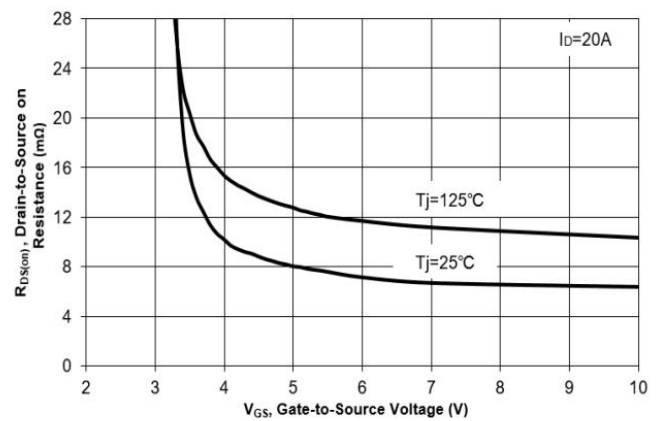
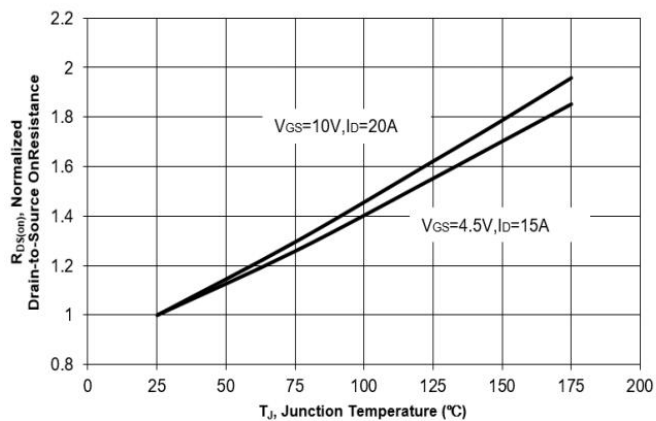
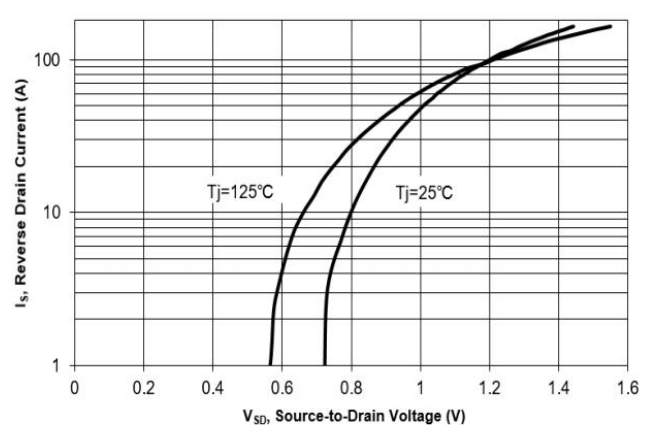
Fig. 5 on-Resistance vs. T_J 

Fig. 6 Typical Body-Diode Forward Characteristics



Electrical Characteristic Curve

Fig. 7 Typical Junction Capacitance

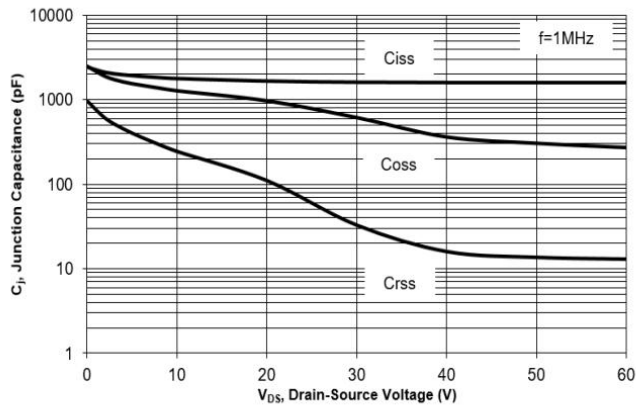
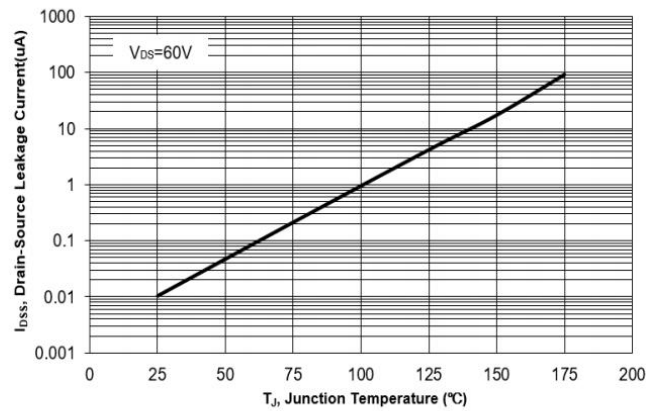
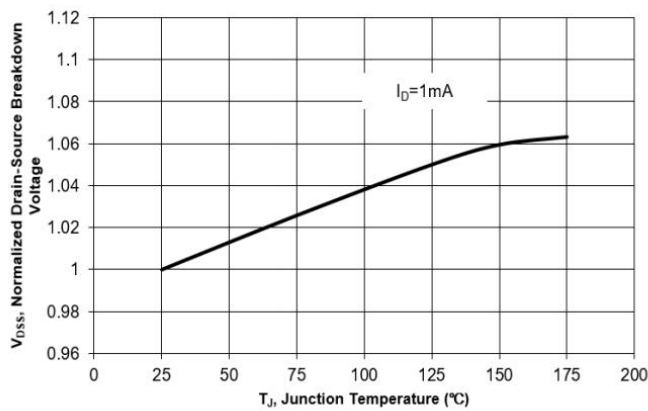
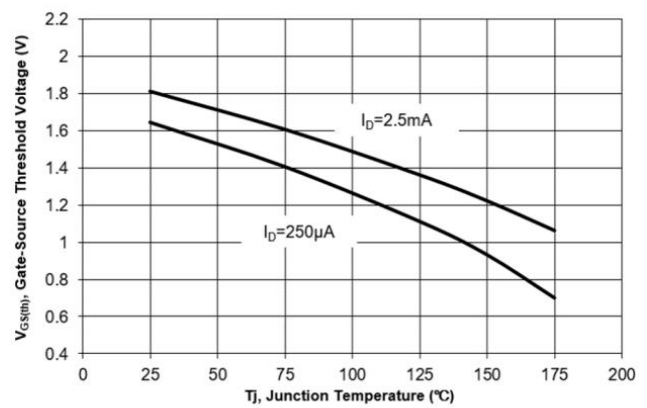
Fig. 8 Drain-Source Leakage Current vs. T_jFig. 9 V_{(BR)DSS} vs. Junction TemperatureFig. 10 Gate Threshold Variation vs. T_j

Fig. 11 Gate Charge

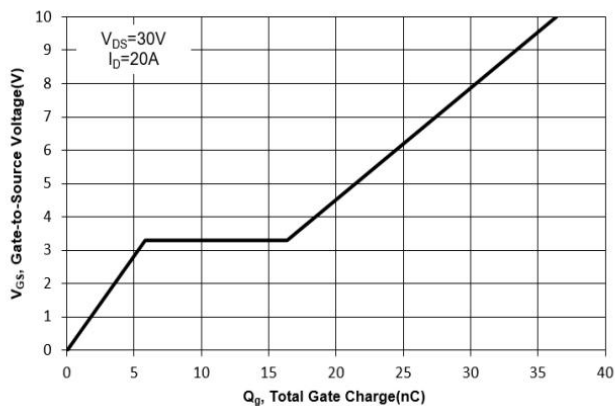
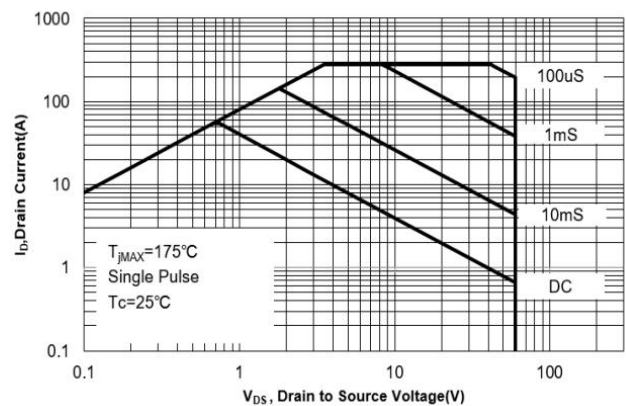
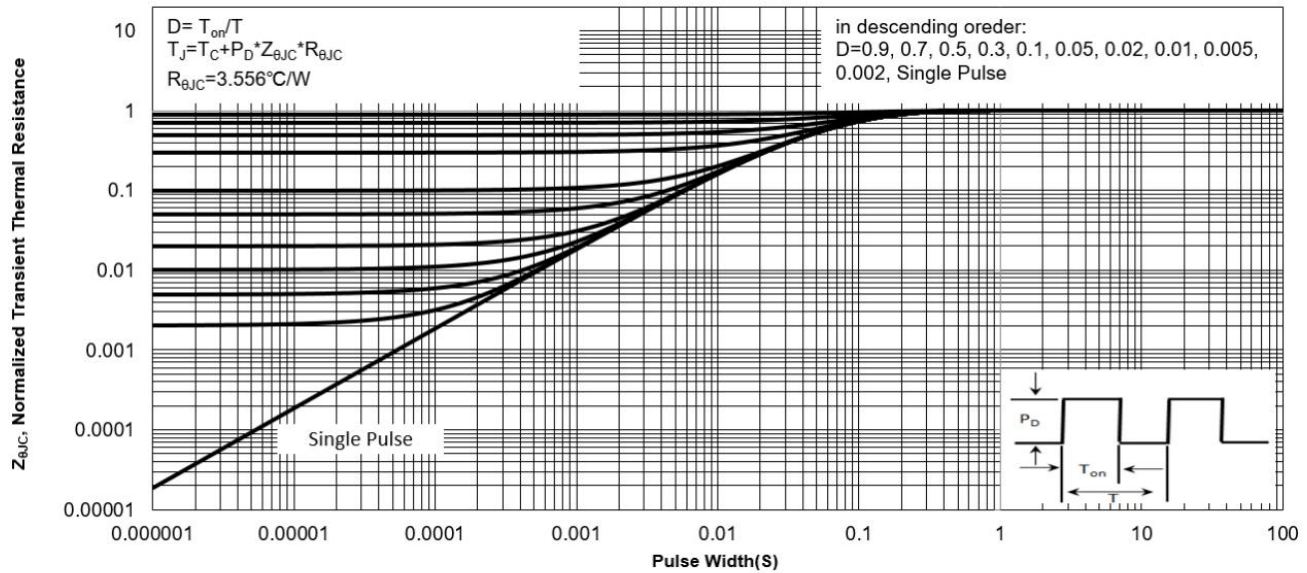
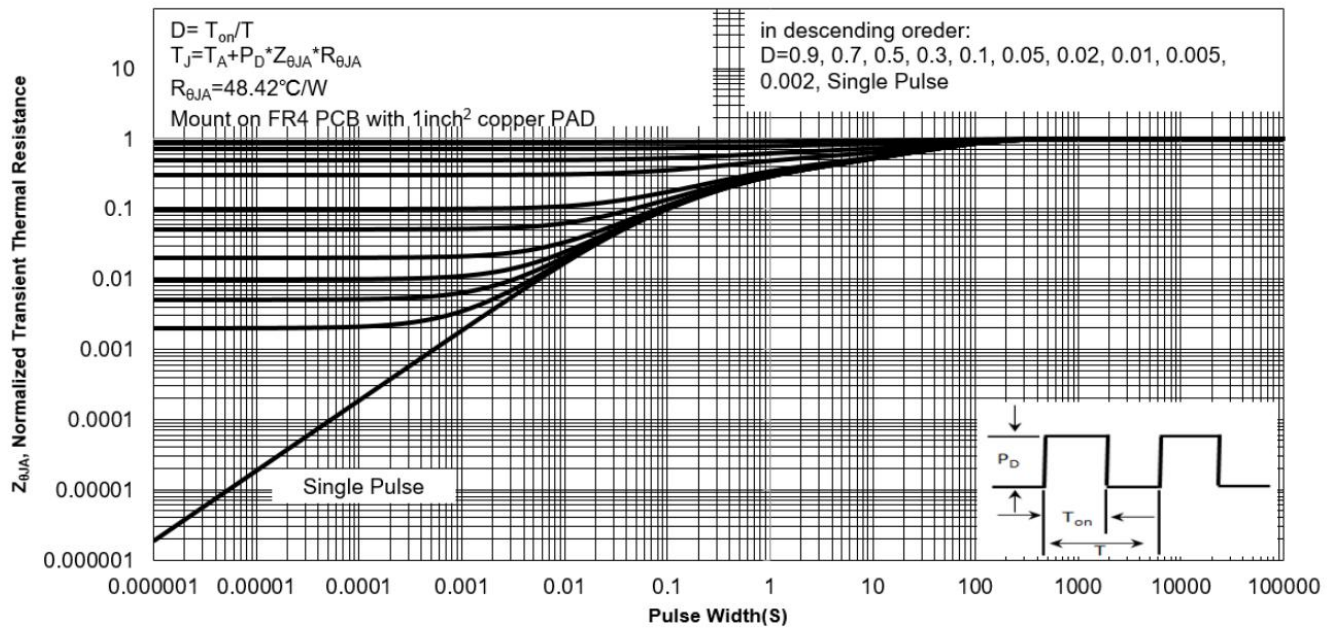


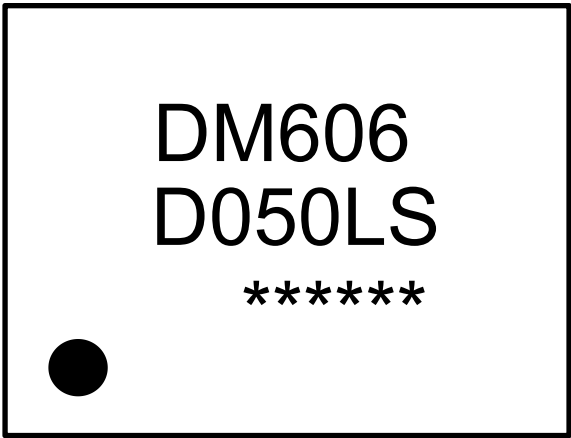
Fig. 12 Safe Operation Area



Electrical Characteristic Curve

Fig. 13 Normalized Maximum Transient Thermal Impedance($z_{\theta JC}$)Fig. 14 Normalized Maximum Transient Thermal Impedance($z_{\theta JA}$)

Marking Instructions

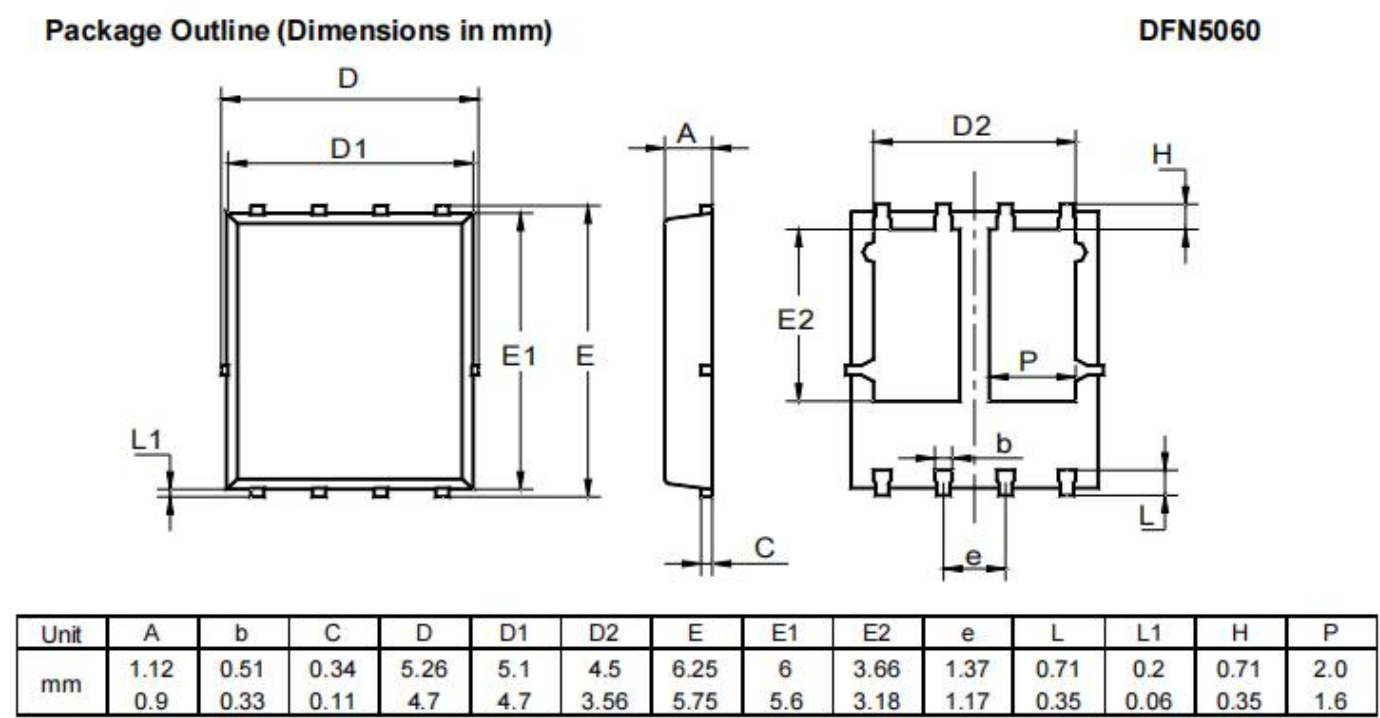


Note:
DM606D050LS: Part No.
*****: Date Code Marking

Packaging SPEC

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
PDFN5X6-8L	12	8 ± 0.1	0.315 ± 0.004	330	13	5,000

Package Outline Dimensions



Recommended Soldering Footprint

