★ Green Device Available
★ Super Low Gate Charge
★ Excellent CdV/dt effect decline
★ Advanced high cell density Trench technology
★ 100% EAS Guaranteed

Product Summary

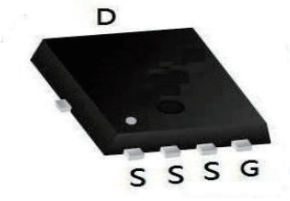
RoHS

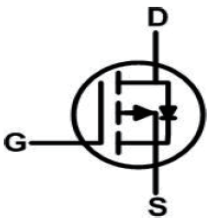
BVDSS	RDSON	ID
-30V	7.5mΩ	-55A

Description

The 60P03D is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.
The 60P03D meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

PDFN3*3 Pin Configuration





Absolute Maximum Ratings (TA=25°C unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A= 25°C	-55	A
		T_A = 100°C	-30	A
I_{DM}	Pulsed Drain Current note1		-168	A
E_{AS}	Single Pulsed Avalanche Energy note2		45	mJ
P_D	Power Dissipation	T_A = 25°C	37	W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance from Junction-to-Ambient note3	---	75	℃/W
$R_{\theta JC}$	Thermal Resistance from Junction-to-Case	---	3.36	℃/W

Electrical Characteristics (T_J =25 °C unless otherwise specified)

Symbol	Parameter		Test Condition	Min.	Typ.	Max.	Units
Static Characteristics							
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS} = 0V, I_D = -250μA	-30	-	-	V
I_{GSS}	Gate-body Leakage current		V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	T_J=25℃	V_{DS} = -30V, V_{GS} = 0V	-	-	-1	μA
		T_J=100℃		-	-	-100	
$V_{GS(th)}$	Gate-Threshold Voltage		V_{DS} = V_{GS}, I_D = -250μA	-1	-	-2.5	V
$R_{DS(on)}$	Drain-Source On-Resistance [4]		V_{GS} = -10V, I_D = -30A	-	7.5	14	mΩ
			V_{GS} = -4.5V, I_D = -15A	-	10	22	
g_{fs}	Forward Transconductance [4]		V_{DS} = -5V, I_D = -30A	-	57	-	S
Dynamic Characteristics [5]							
C_{iss}	Input Capacitance		V_{DS} = -15V, V_{GS} =0V, f =1MHz	-	2396	-	pF
C_{oss}	Output Capacitance			-	325	-	
C_{rss}	Reverse Transfer Capacitance			-	283	-	
R_g	Gate Resistance		f =1MHz	-	10.5	-	Ω
Switching Characteristics[5]							
Q_g	Total Gate Charge		V_{GS} = -10V,V_{DS} = -15V, I_D= -30A	-	30	-	nC
Q_{gs}	Gate-Source Charge			-	5	-	
Q_{gd}	Gate-Drain Charge			-	7.5	-	
$t_{d(on)}$	Turn-On Delay Time		V_{GS} = -10V, V_{DD} = -15V, R_G = 3Ω, I_D= -30A	-	14.1	-	ns
t_r	Rise Time			-	20	-	
$t_{d(off)}$	Turn-Off Delay Time			-	94	-	
t_f	Fall Time			-	65	-	
t_{rr}	Body Diode Reverse Recovery Time		I_F = -30A, dI/dt = 100A/μs	-	19	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge			-	9	-	nC
Drain-Source Body Diode Characteristics							
V_{SD}	Diode Forward Voltage[4]		I_S = -1A, V_{GS} = 0V	-	-	-1.2	V
I_S	Continuous Source Current	T_C=25°C	-	-	-	-55	A

Note :

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH, IAS= -30A.
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Performance Characteristics

Figure1: Output Characteristics

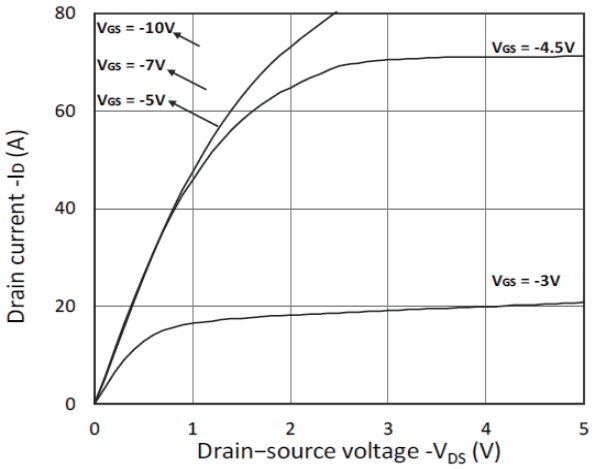


Figure 2: Typical Transfer Characteristics

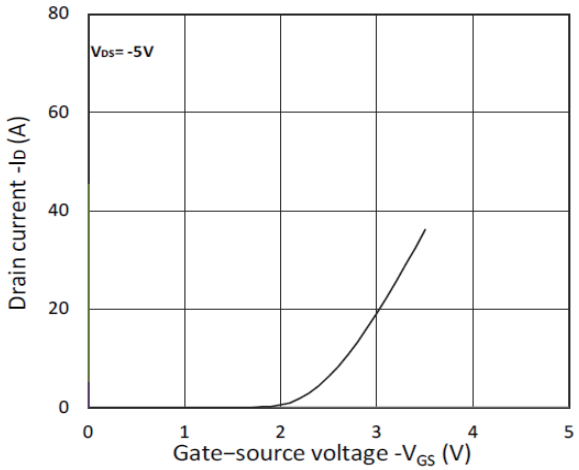


Figure 3:Forward Characteristics of Reve

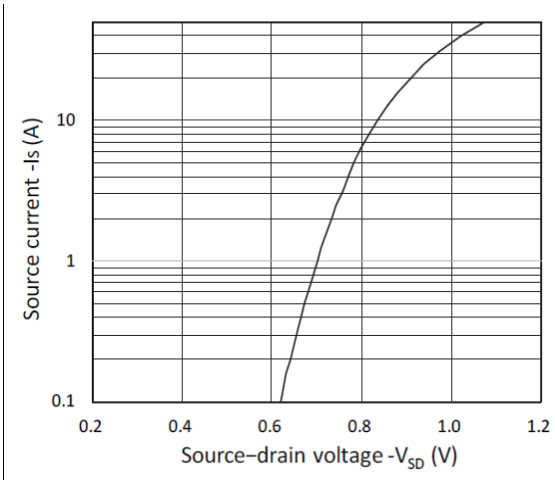


Figure 4: RDS(ON) vs. VGS

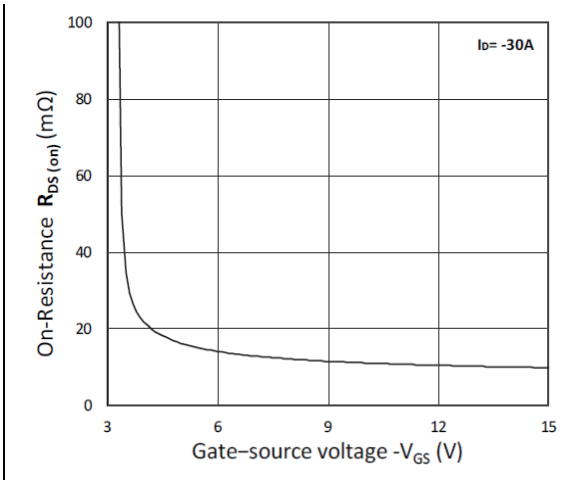


Figure 5: RDS(ON) vs. ID

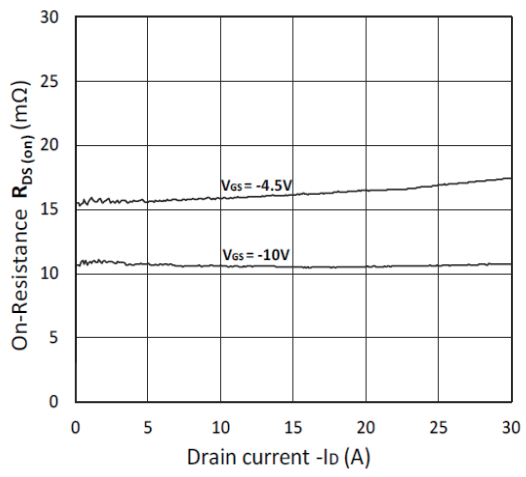
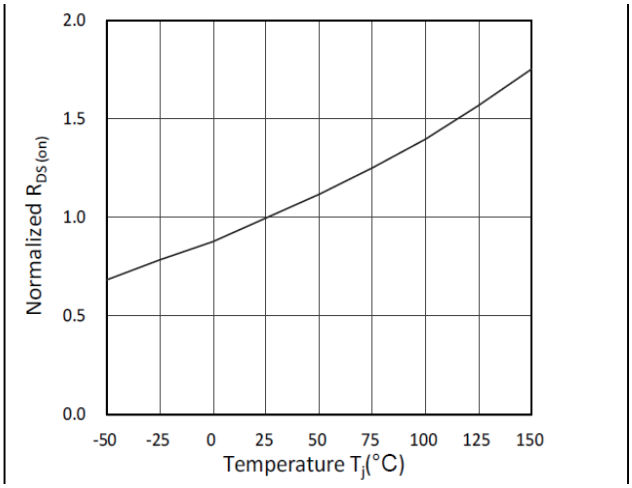


Figure 6:Normalized RDS(on) vs. Tempe



Typical Performance Characteristics

Figure 7: Capacitance Characteristics

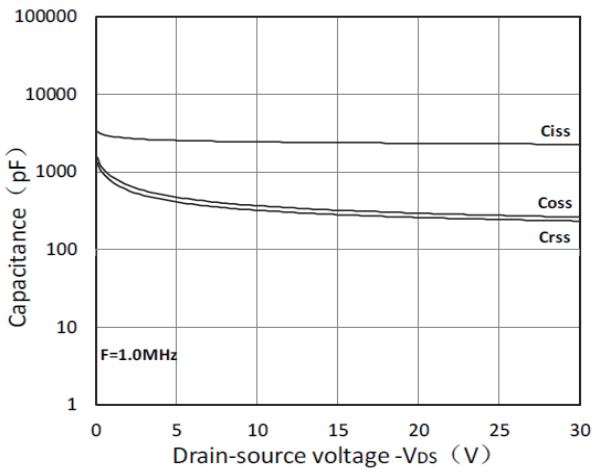


Figure 8:Gate Charge Characteristics

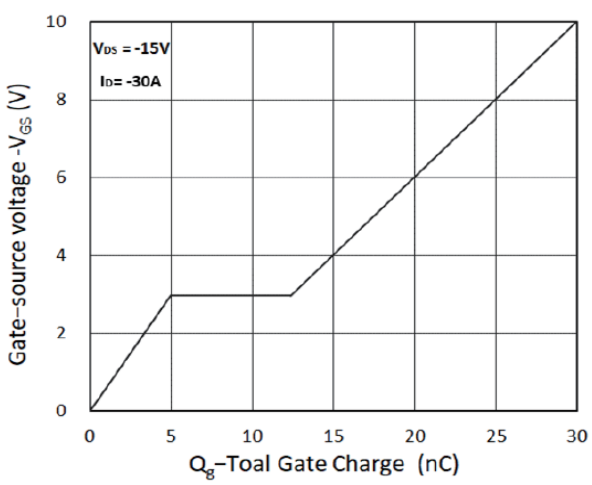


Figure 9: Power Dissipation

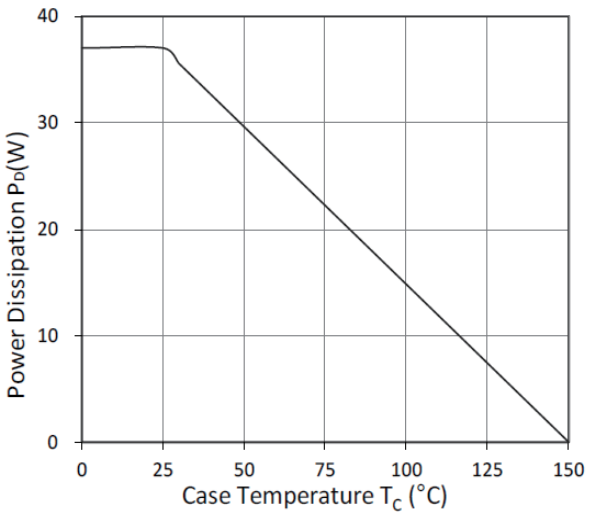


Figure 10: Safe Operating Area

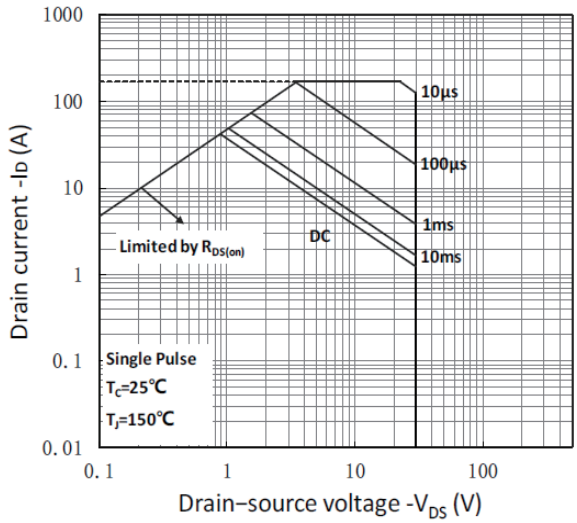
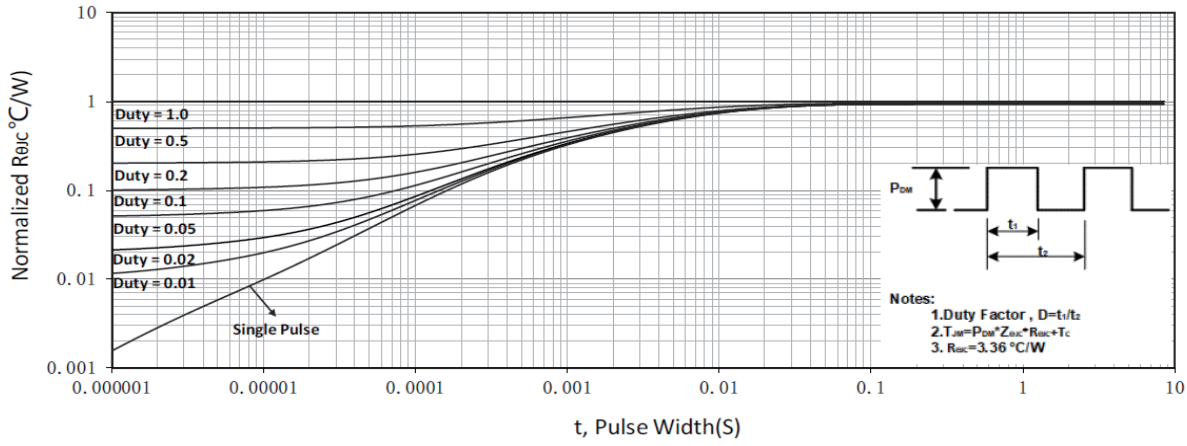
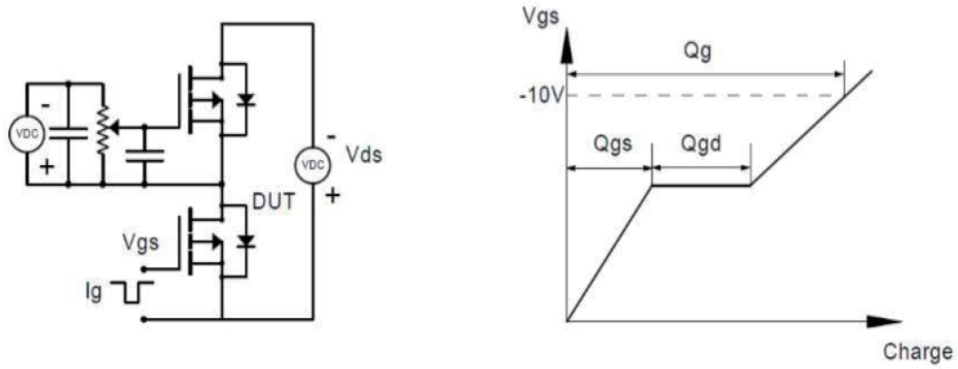


Figure 11:Normalized Maximum Transien

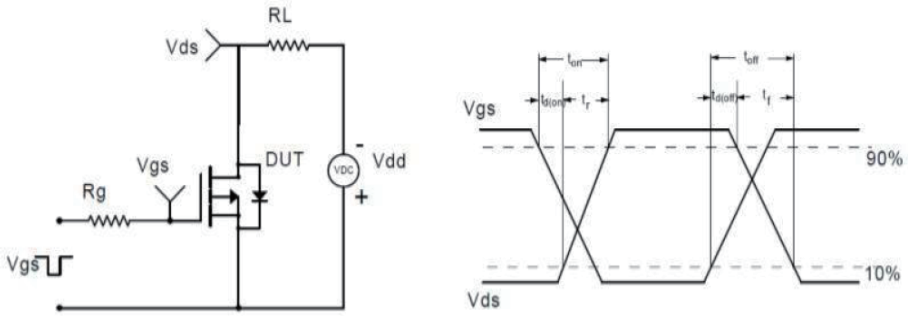


Test Circuit

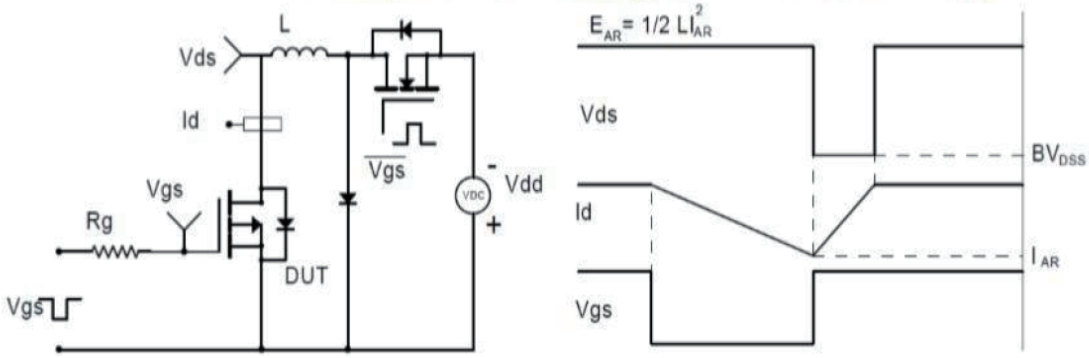
Gate Charge Test Circuit & Waveform



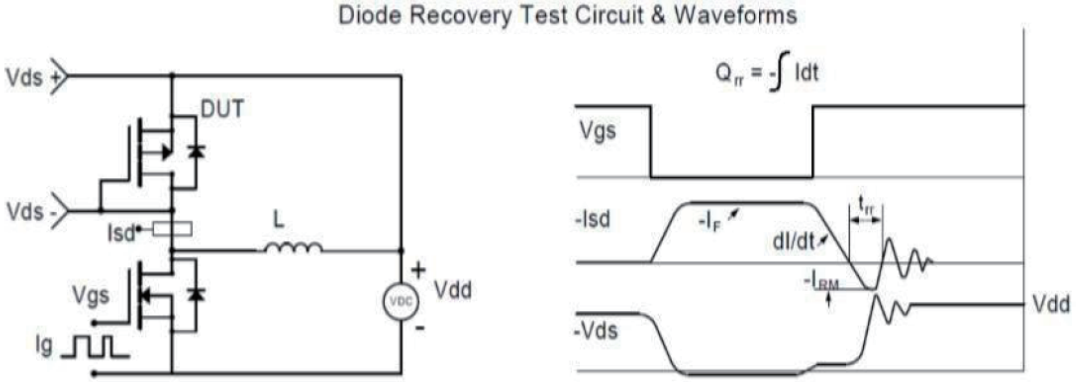
Resistive Switching Test Circuit & Waveforms



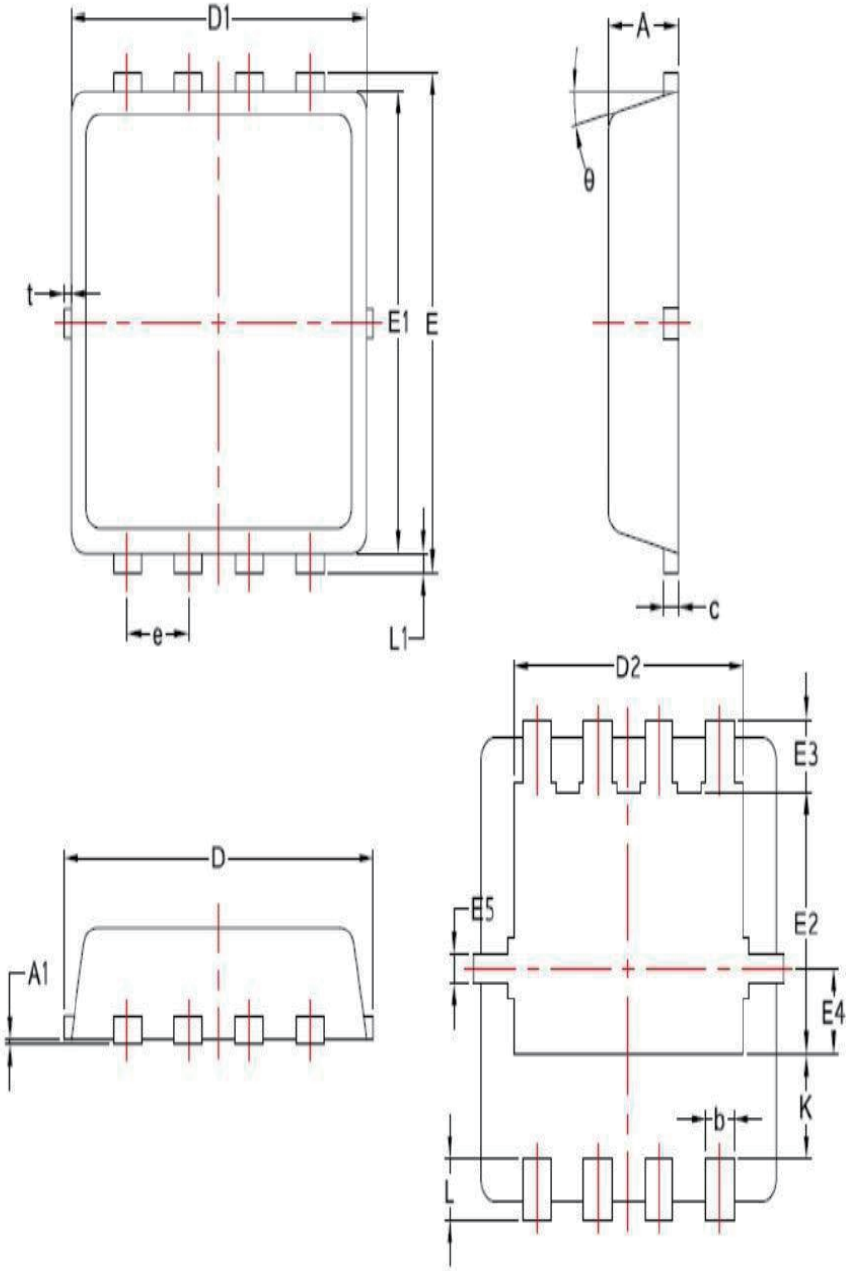
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Mechanical Data- PDFN3.3X3.3-8L



SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°