UN0302P016-PD33

ROHS

P-Channel Enhancement Mode MOSFET

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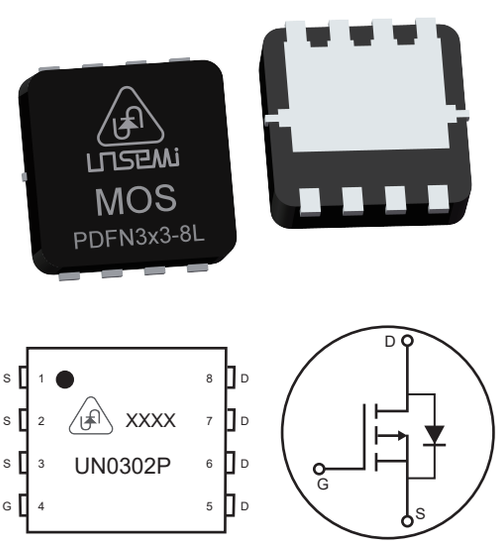
Product Summary

V_{DS}	-30V
I_D(Tc=25℃)	-20A
$R_{DS(ON)}$(@V_{GS}=-10V I_D=-10A)	≤23mΩ
$R_{DS(ON)}$(@V_{GS}=-4.5V I_D=-7.0A)	≤34mΩ

PDFN3X3-8L



Features

- ◆ Surface Mount Package
- ◆ Lead Free Product is Acquired
- ◆ High Power and Current Handing Capability

Applications

- ◆ Load Switch
- ◆ Battery Switch
- ◆ Power Management

Package Marking And Ordering information

Part Number	Package Type	Packaging	Reel(pcs)
UN0302P016-PD33	PDFN3X3-8L	Tape & Reel	5,000

Absolute Maximum Ratings Tc = 25℃ unless otherwise specified

Parameter	Symbol	Max.	Units
Drain to Source Voltage	V_{DS}	-30	V
Continuous Drain Current	I_D	-20	A
Pulsed Drain Current [1]	I_{DM}	-60	A
Gate-Source Voltage	V_{GS}	±20	V
Power Dissipation	P_D	3.125	W
Junction and Storage Temperature Range	T_J,Tstg	-55~+150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Units
Thermal Resistance Junction-Ambient [2]	$R_{\theta JA}$	--	40	℃/W

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2). Surface Mounted on FR4 Board, t≤10 sec.

3). Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

4). Guaranteed by design, not subject to production.

Electrical Characteristics at Tc = 25℃ unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
STATIC PARAMETERS [3]						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-30	-33		V
Drain-Source Leakage Current	I_{DSS}	V_{DS} = -30V , V_{GS} = 0V			-1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V , V_{DS} = 0V			±100	nA
Gate-Source Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS} , I_D = -250μA	-1.0	-1.5	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = -10V , I_D = -10A		16	23	mΩ
		V_{GS} = -4.5V , I_D = -7.0A		25	34	
Forward Transconductance	gfs	V_{DS} = -15V , I_D = -9.1A	10			S
BODY-DIODE PARAMETERS [3]						
Drain-Source Diode Forward Voltage	V_{SD}	I_S = -2.1A , V_{GS} = 0V		-1.2		V
DYNAMIC PARAMETERS [4]						
Input Capacitance	Ciss	V_{GS} = 0V V_{DS} = -15V F = 1MHz		1600		pF
Output Capacitance	Coss			350		pF
Reverse Transfer Capacitance	Crss			300		pF
Gate Charge Total	Qg	V_{GS} = -10V V_{DS} = -15V I_D = -9.1A		30		nC
Gate to Source Charge	Qgs			5.5		nC
Gate to Drain Charge	Qgd			8.0		nC
SWITCHING PARAMETERS [4]						
Turn-On Delay Time	$t_{d(ON)}$	V_{DS} = -15V, V_{GS} = -10V R_{GEN} = 6.0Ω , I_D = -1.0A		10		nS
Turn-On Rise Time	tr			15		nS
Turn-Off Delay Time	$t_{d(OFF)}$			110		nS
Turn-Off Fall Time	tf			70		nS

Electrical Characteristics Curves

Fig 1. Output Characteristics

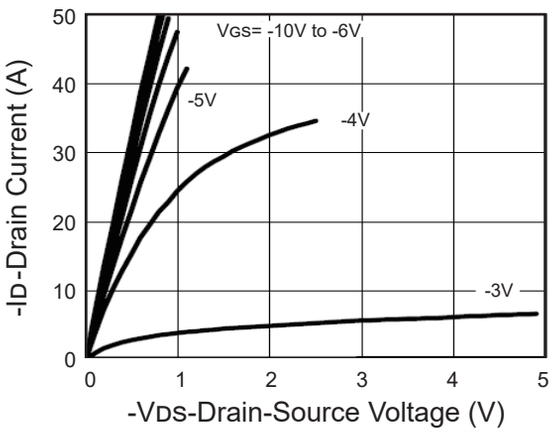


Fig 2. Typical Tansfer Characeristic

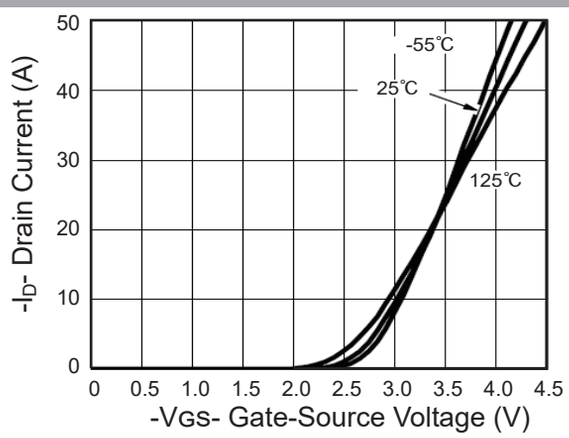


Fig 3. On-Resistance Vs Drain Current

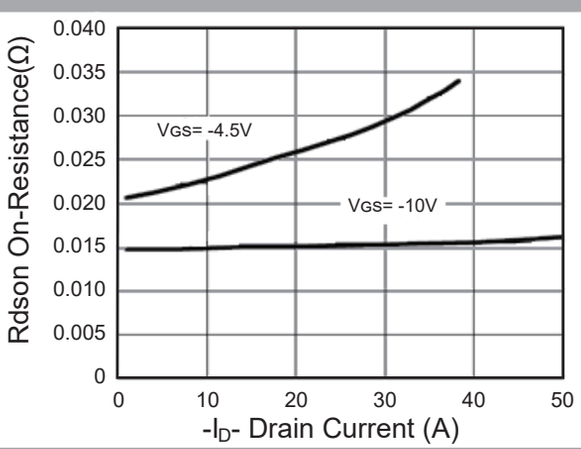


Fig 4. On-Resistance Vs JunctionTemperature

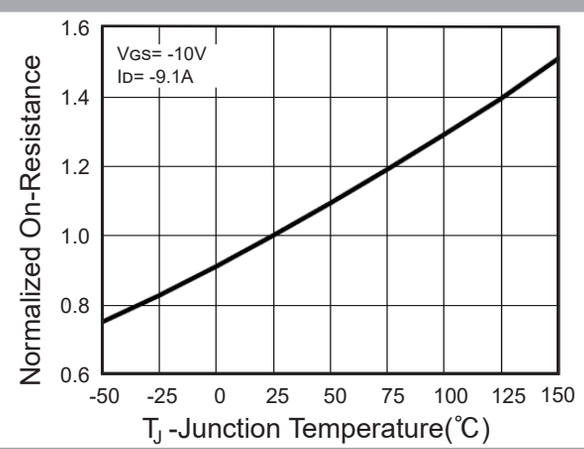


Fig 5. On-Resistance Vs Gate-Source Voltage

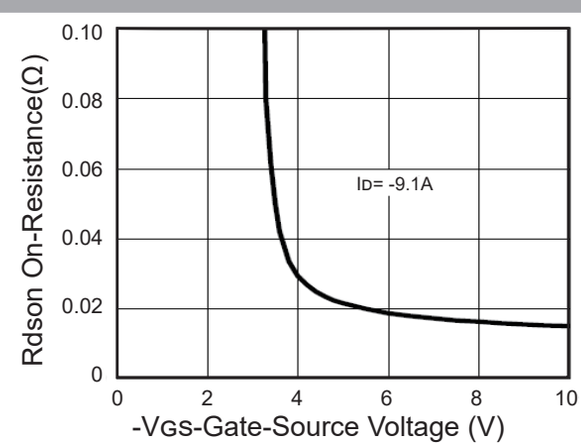
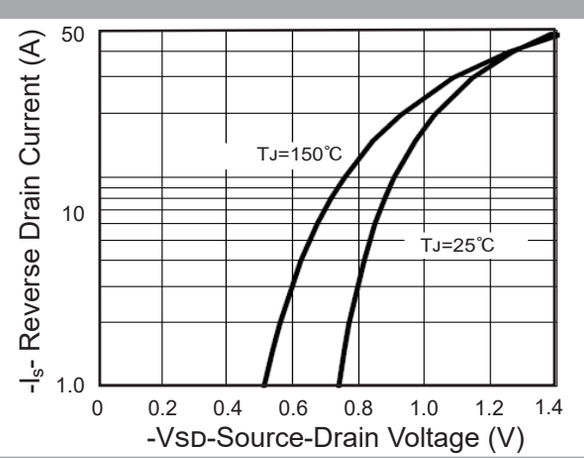


Fig 6. Source-Drain Diode Forward



Electrical Characteristics Curves

Fig 7. Capacitance Vs Drain-Source Voltage

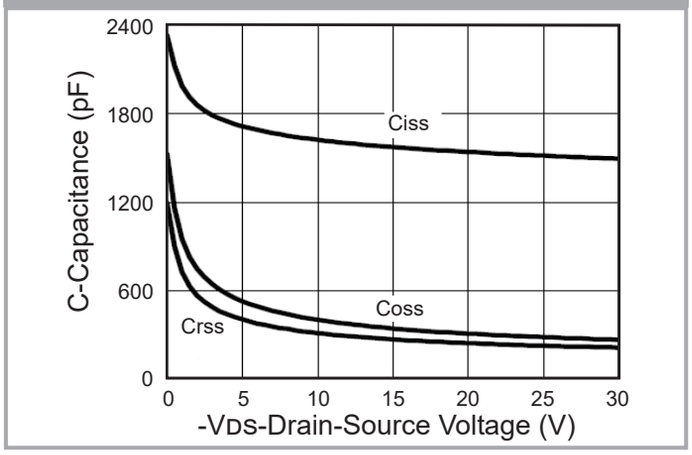


Fig 8. Safe Operation Area

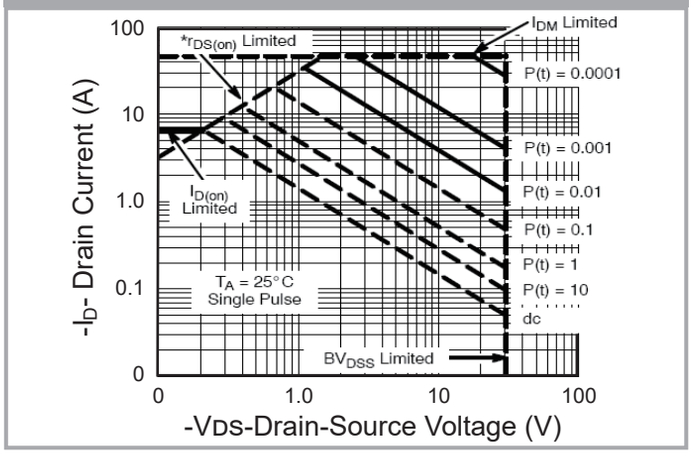


Fig 9. Power Derating

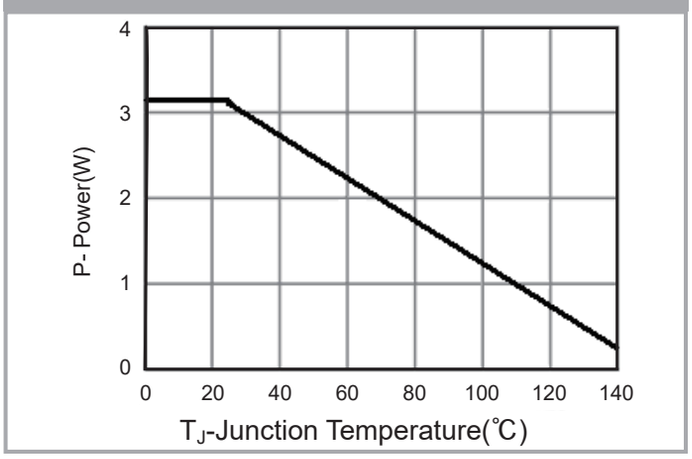


Fig 10. Drain Current Vs JunctionTemperature

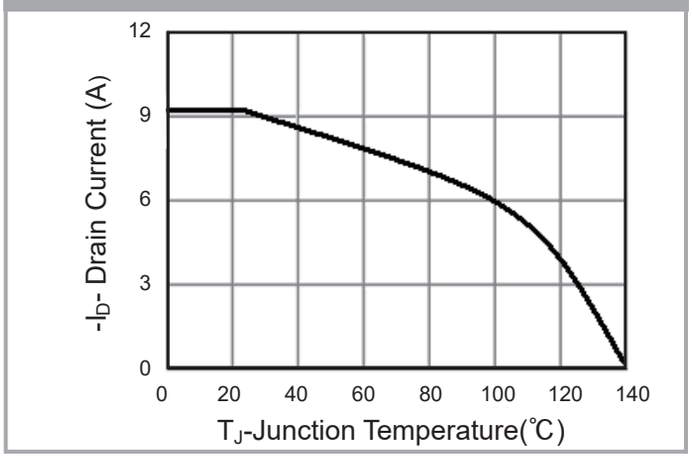
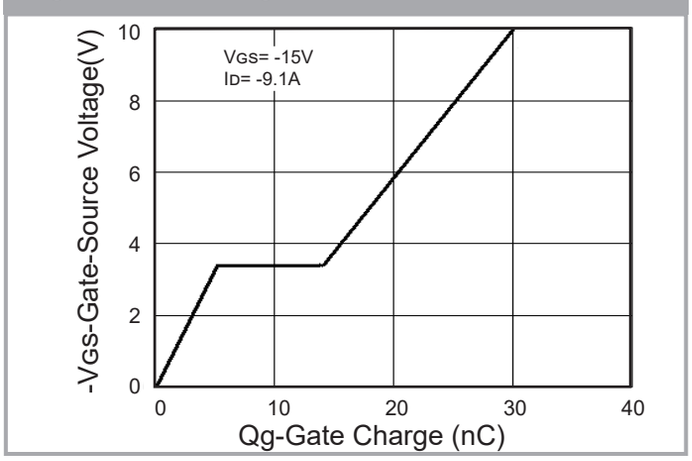
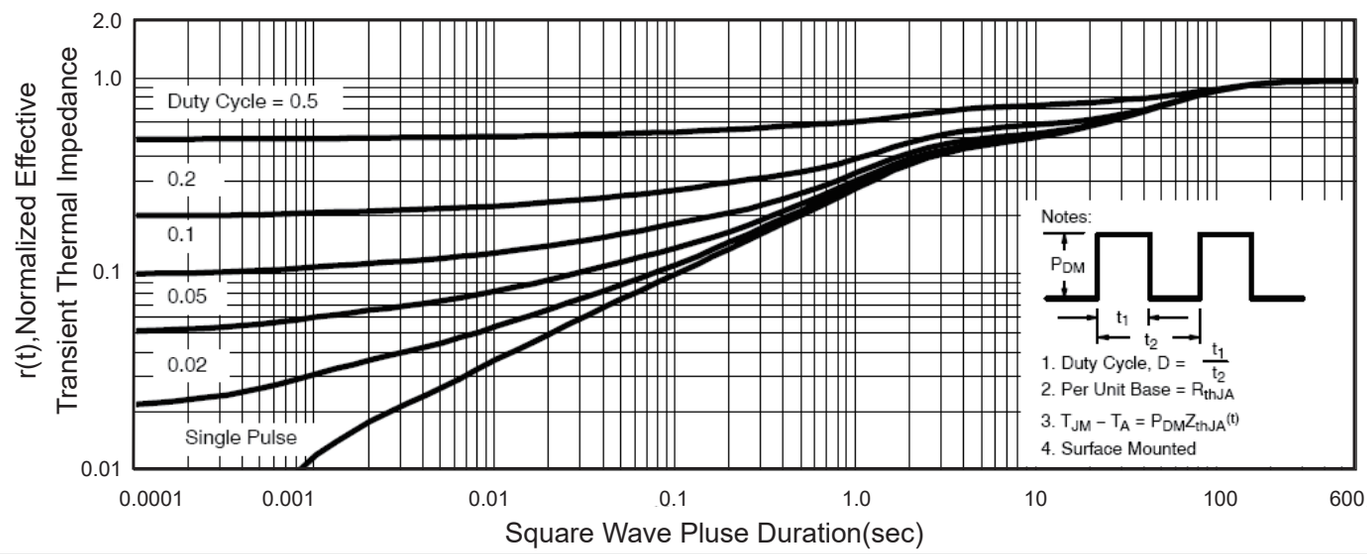


Fig 11. Gate Charge Characteristics



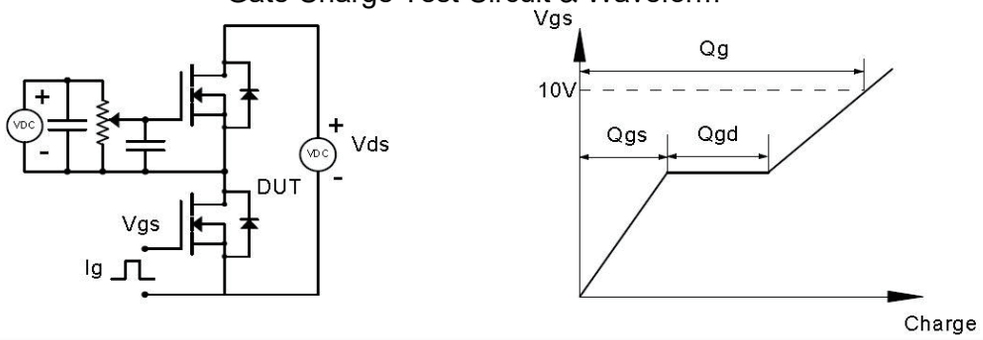
Electrical Characteristics Curves

Fig 12. Safe Normalized Maximum Transient Thermal Impedance

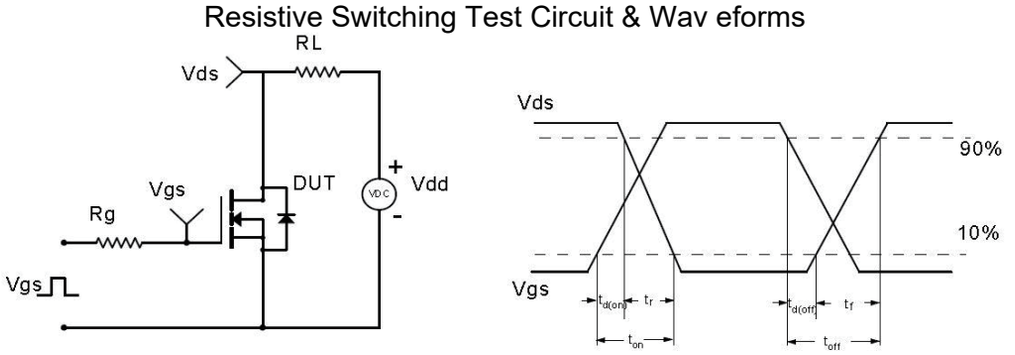


Test Circuit

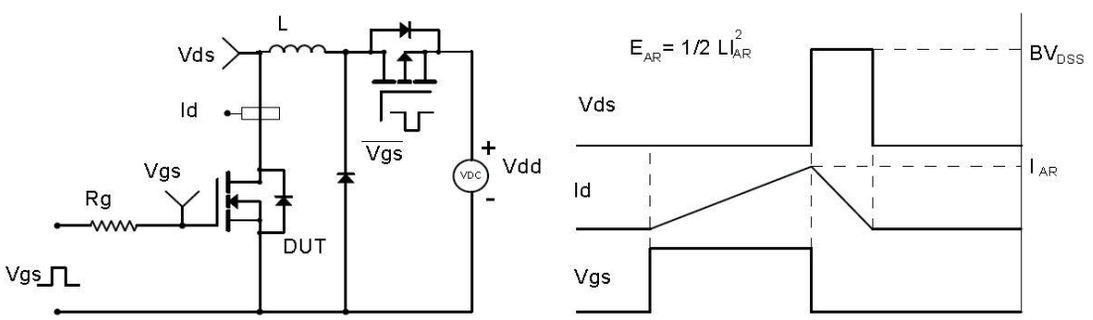
Gate Charge Test Circuit & Waveform



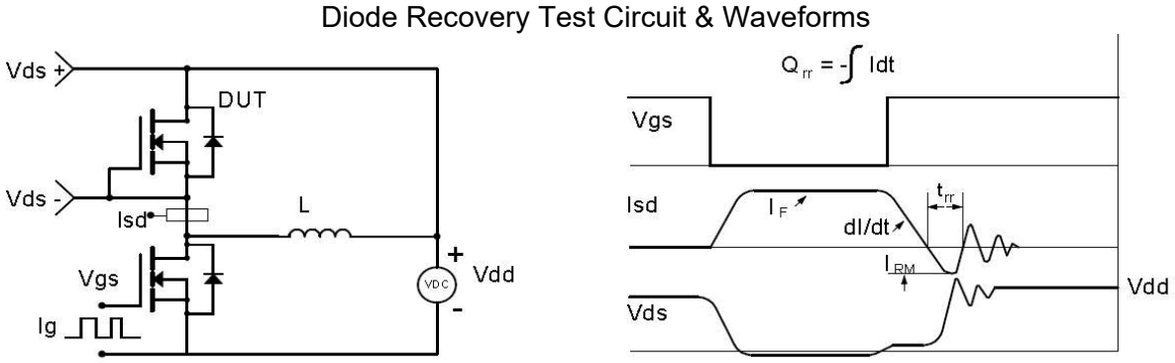
Resistive Switching Test Circuit & Wav eforms



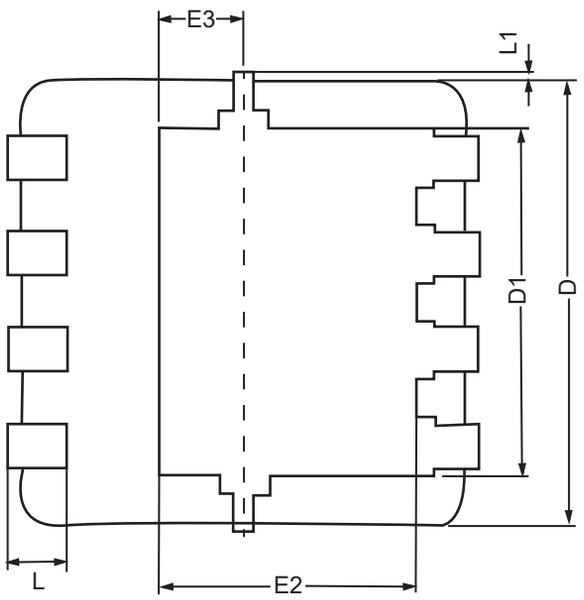
Unclamped Inductive Switching (UIS) T est Circuit & Waveforms

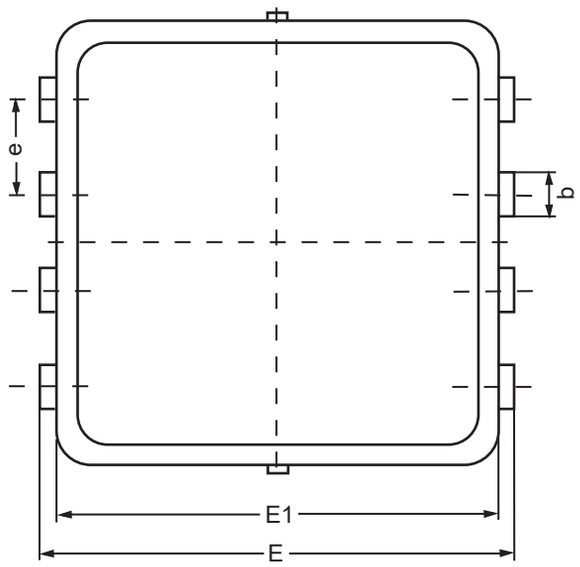


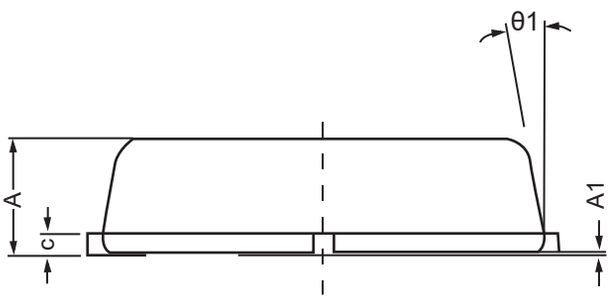
Diode Recovery Test Circuit & Waveforms



PDFN3X3-8L Package Outline & Dimensions (Units: mm / in)







Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.70	0.80	0.90	0.0276	0.0315	0.0354
A1	0	-	0.05	0	-	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.152	0.25	0.004	0.006	0.010
D	3.00 BSC			0.118 BSC		
D1	2.35 BSC			0.093 BSC		
E	3.20 BSC			0.126 BSC		
E1	3.00 BSC			0.118 BSC		
E2	1.75 BSC			0.069 BSC		
E3	0.575 BSC			0.023 BSC		
e	0.65 BSC			0.026 BSC		
L	0.30	0.40	0.50	0.0118	0.0157	0.0197
L1	0	-	0.10	0	-	0.004
θ1	0°	10°	12°	0°	10°	12°

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