

Features

- Uses CRM(CQ) advanced Trench technology
- Extremely low on-resistance $R_{DS(on)}$
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- AEC-Q101 Qualified

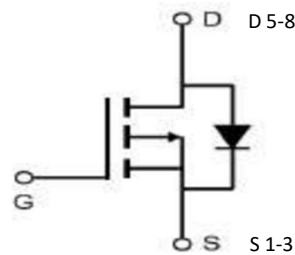
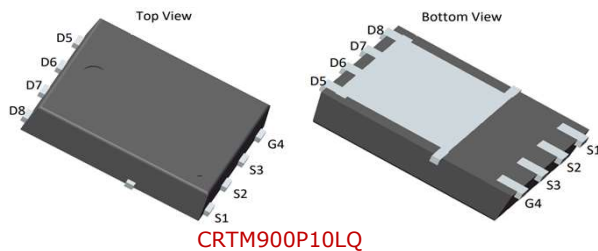
Product Summary

V_{DS}	-100V
$R_{DS(on)}@10V$ typ	74mΩ
I_D	-17A

Applications

- Motor control and drive
- Battery management
- UPS (Uninterruptible Power Supplies)

100% DVDS Tested
100% Avalanche Tested



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
CRTM900P10LQ	900P10LQ	PDFN5x6	Tape&reel	N/A	N/A	4000pcs

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-100	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	-17 -12	A
Pulsed drain current ($T_C = 25^\circ\text{C}$, t_p limited by T_{jmax})	$I_{D\ pulse}$	-66	A
Avalanche energy, single pulse ($I_D = -30A$, $R_g = 25\Omega$) ^[1]	E_{AS}	225	mJ
Gate-Source voltage	V_{GS}	± 20	V
Power dissipation ($T_C = 25^\circ\text{C}$)	P_{tot}	52	W
Operating junction and storage temperature	T_j, T_{stg}	-55...+175	$^\circ\text{C}$
Soldering temperature, wave soldering only allowed at leads (1.6mm from case for 10s)	T_{sold}	260	$^\circ\text{C}$

Notes:1.EAS was tested at $T_j = 25^\circ\text{C}$, $L = 0.5mH$, $I_{AS} = -30A$, $V_{gs} = -10V$.

Thermal Resistance

Parameter	Symbol	Max	Unit
Thermal resistance, junction – case (junction-heat-spreader)	R_{thJC}	2.9	$^\circ\text{C/W}$
Thermal resistance, junction – ambient(min. footprint)	R_{thJA}	51	

Electrical Characteristic (at T_j = 25 °C, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Static Characteristic						
Drain-source breakdown voltage	BV _{DSS}	-100	-	-	V	V _{GS} =0V, I _D =-250uA
		-100	-	-	V	V _{GS} =0V, I _D =-1mA
Gate threshold voltage	V _{GS(th)}	-1	-	-3	V	V _{DS} =V _{GS} ,I _D =-250uA
Zero gate voltage drain current	I _{DSS}	-	-	-1	μA	V _{DS} =-100V,V _{GS} =0V T _j =25°C
		-	-	-100		T _j =125°C
Gate-source leakage current	I _{GSS}	-	-	±100	nA	V _{GS} =±20V,V _{DS} =0V
Drain-source on-state resistance	R _{DS(on)}	-	74	90	mΩ	V _{GS} =-10V, I _D =-10A
			84	120		V _{GS} =-4.5V, ID=-8A
Transconductance	g _{fs}	-	29	-	S	V _{DS} =-5V,I _D =-10A

Dynamic Characteristic

Input Capacitance	C _{iss}	-	2770	-	pF	V _{GS} =0V, V _{DS} =-50V, f=1MHz
Output Capacitance	C _{oss}	-	144	-		
Reverse Transfer Capacitance	C _{rss}	-	97	-		
Gate Total Charge	Q _G	-	50	-	nC	V _{GS} =-10V, V _{DS} =-50V, I _D =-10A, f=1MHz
Gate-Source charge	Q _{gs}	-	14	-		
Gate-Drain charge	Q _{gd}	-	8	-		
Turn-on delay time	t _{d(on)}	-	9	-	ns	V _{GS} =-10V, V _{DS} =-50V, R _{G_ext} =2.7Ω, I _D =-10A
Rise time	t _r	-	40	-		
Turn-off delay time	t _{d(off)}	-	107	-		
Fall time	t _f	-	60	-		
Gate resistance	R _G	-	12	-	Ω	V _{GS} =0V, V _{DS} =0V, f=1MHz

Body Diode Characteristic

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Diode continuous forward current	I _S	-	-	-17	A	T _c = 25°C
Diode pulse current	I _S pulse	-	-	-68	A	T _c = 25°C
Body Diode Forward Voltage	V _{SD}	-	-0.9	-1.3	V	V _{GS} =0V, I _{SD} =-10A
Body Diode Reverse Recovery Time	t _{rr}	-	38	-	ns	I _F =-10A, dI/dt=100A/μs
Body Diode Reverse Recovery Charge	Q _{rr}	-	49	-	nC	

Typical Performance Characteristics

Fig 1: Output Characteristics

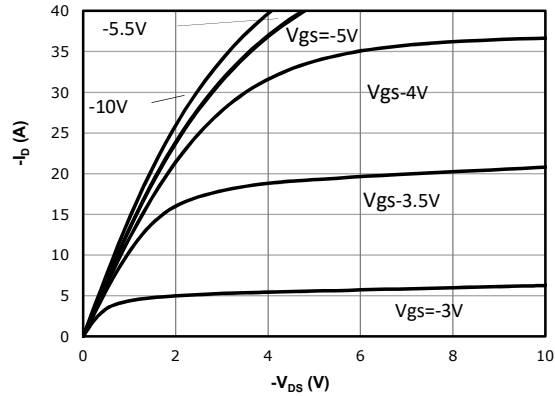


Fig 2: Transfer Characteristics

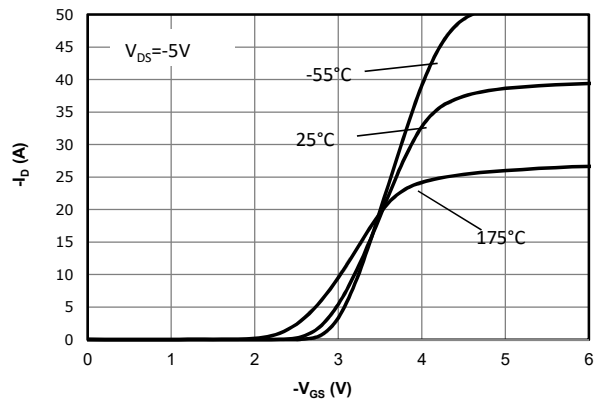


Fig 3: Rds(on) vs Drain Current and Gate Voltage

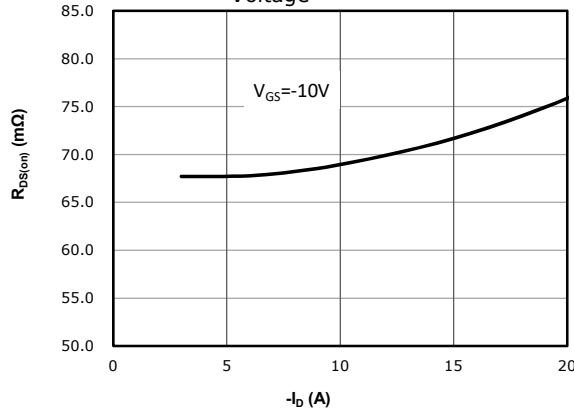


Fig 4: Rds(on) vs Gate Voltage

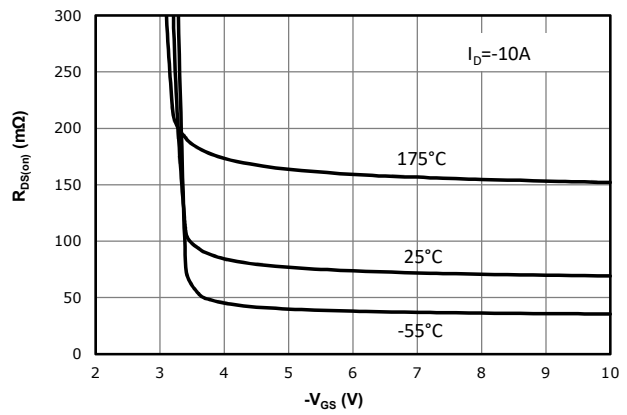


Fig 5: Rds(on) vs. Temperature

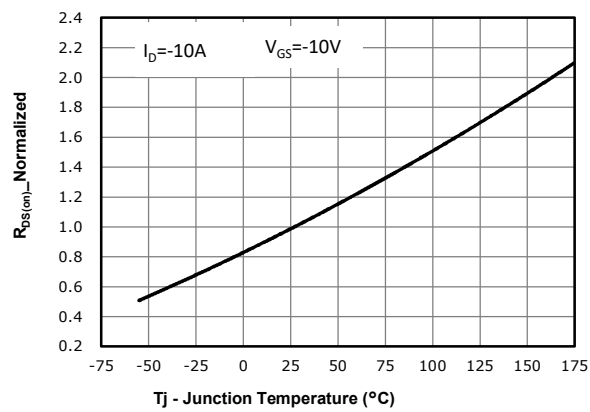


Fig 6: Vgs(th) vs. Temperature

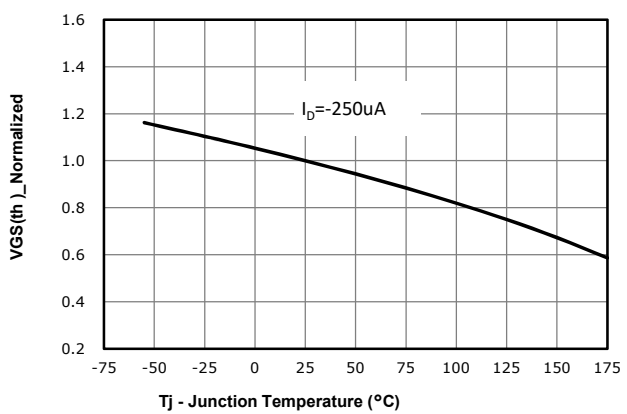


Fig 7: BVds vs. Temperature

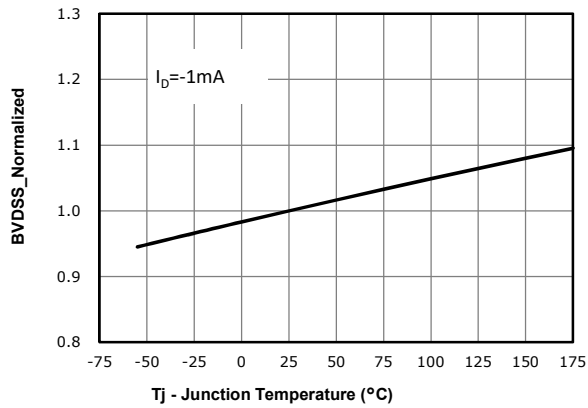


Fig 8: Capacitance Characteristics

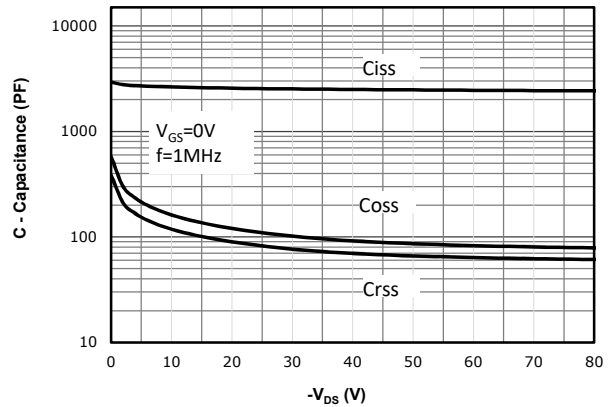


Fig 9: Gate Charge Characteristics

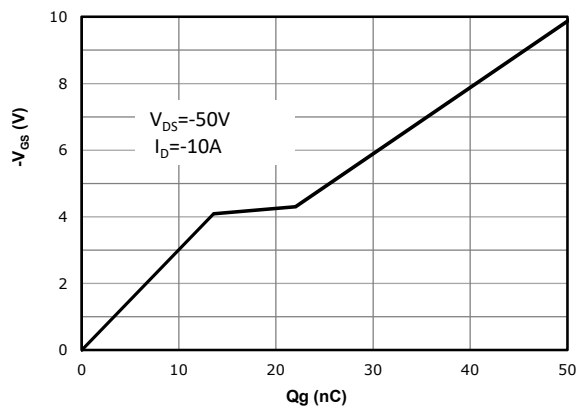


Fig 10: Body-diode Forward Characteristics

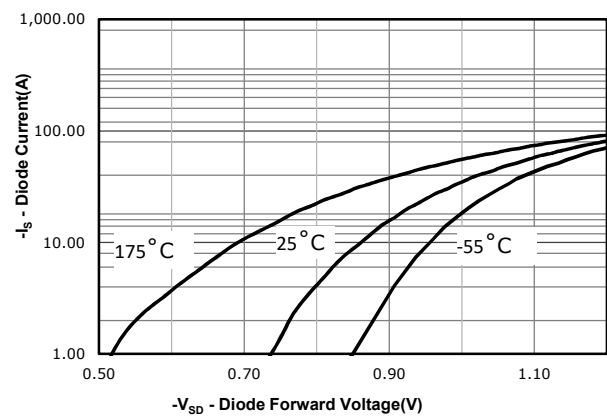


Fig 11: Power Dissipation

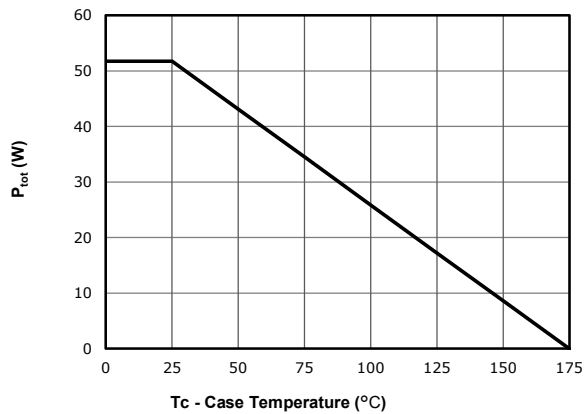


Fig 12: Drain Current Derating

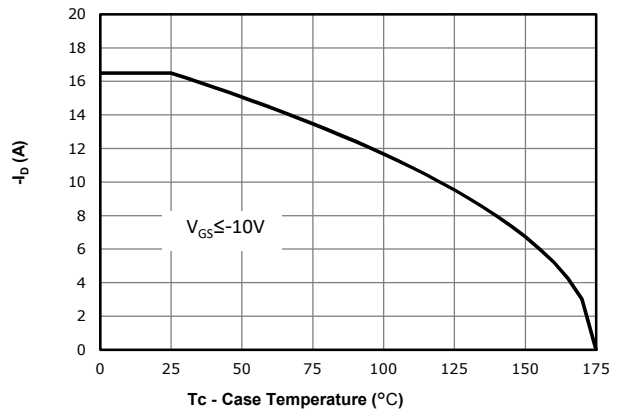


Fig 13: Safe Operating Area

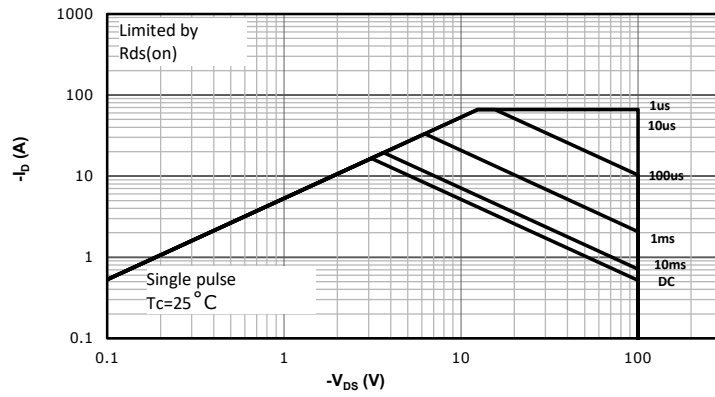
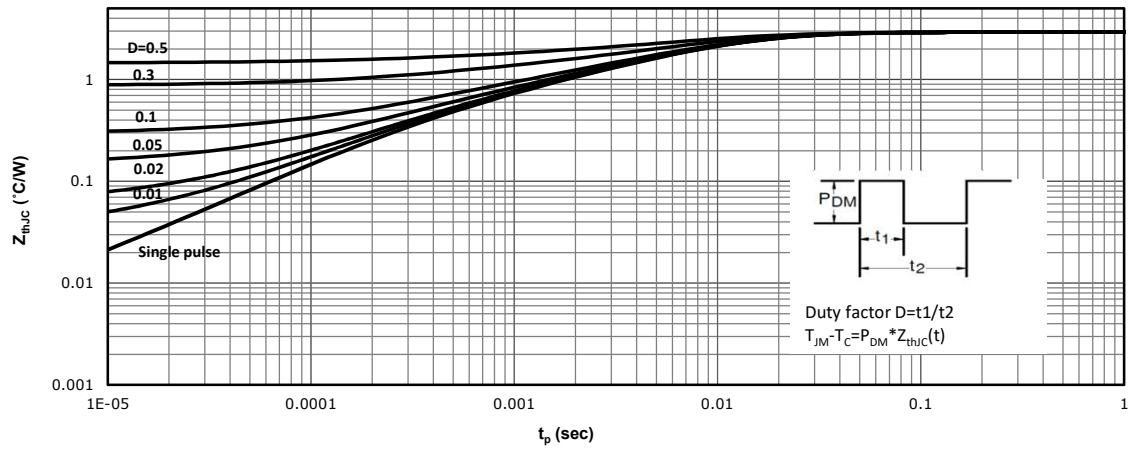
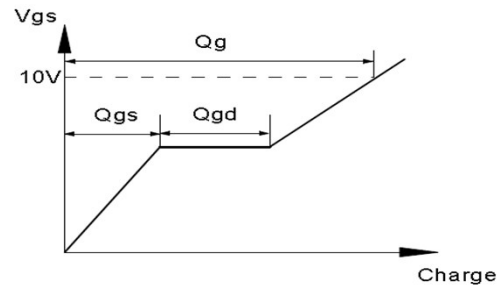
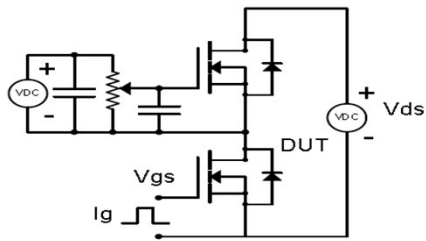


Fig 14: Max. Transient Thermal Impedance

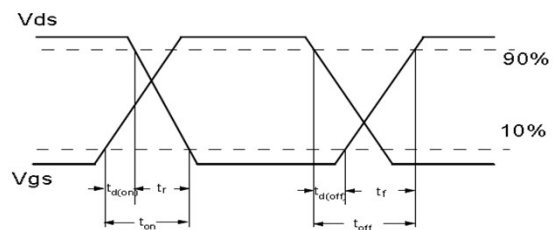
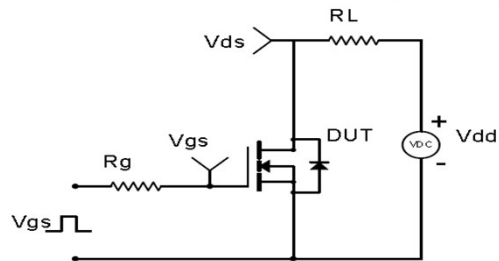


Test Circuit & Waveform

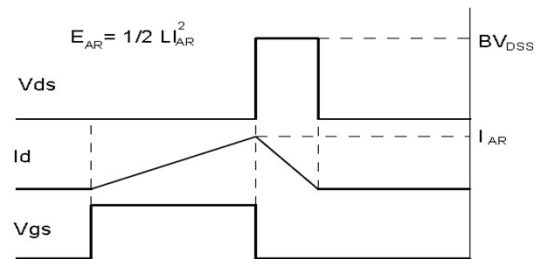
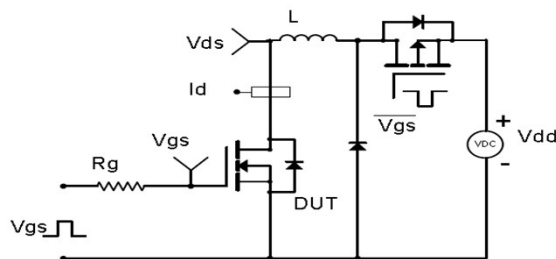
Gate Charge Test Circuit & Waveform



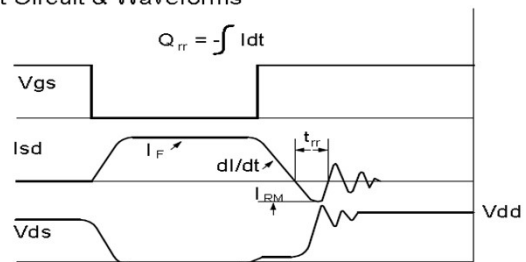
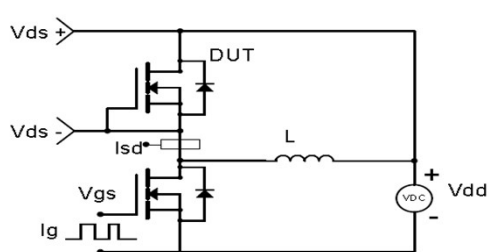
Resistive Switching Test Circuit & Waveforms



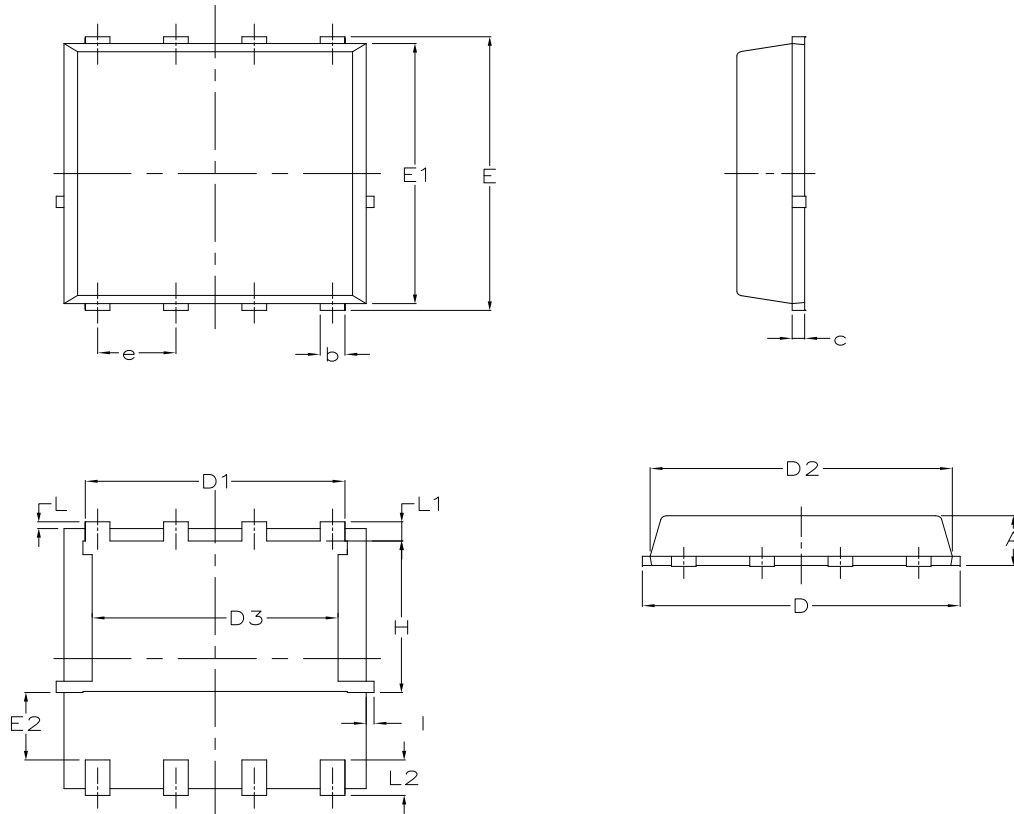
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Outline: PDFN5x6 Type P



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	NOM.	Max.	Min.	NOM.	Max.
A	0.90	1.10	1.20	0.035	0.043	0.047
b	0.31	0.41	0.51	0.012	0.016	0.020
c	0.15	0.20	0.30	0.006	0.008	0.012
D	4.80	4.98	5.15	0.189	0.196	0.203
D1	3.91	4.22	4.36	0.154	0.166	0.172
D2	4.80	4.90	5.00	0.189	0.193	0.197
D3	3.85	4.00	4.15	0.152	0.157	0.163
E	5.90	6.05	6.15	0.232	0.238	0.242
E1	5.65	5.76	5.85	0.222	0.227	0.230
E2	1.10	-	-	0.043	-	-
e	1.27 BSC			0.050 BSC		
L	0.05	0.15	0.25	0.002	0.006	0.010
L1	0.38	0.43	0.50	0.015	0.017	0.020
L2	0.51	0.79	0.86	0.020	0.031	0.034
H	3.25	3.35	3.58	0.128	0.132	0.141
I	0.00	-	0.18	0.000	-	0.007

Marking**NOTE:**

XAAAAAAAA-Y

X

—Assembly location code

AAAAAAA

—Assembly lot NO. last 7 digits

Y

—Bin code

Revision History

Revision	Date	Major changes
1.0	2023/12/8	Release of preliminary 1.0 version.
1.1	2024/1/29	Update VTH Spec
1.2	2024/7/26	Add Is /Is pulse
2.0	2025/2/27	1.Update Package name. 2.Delete Dynamic Characteristic parameters spec. 3.Udate Fig5/Fig12.

Disclaimer

CRM reserves the right to change any product or information in this Specification at any time without prior notice.

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