preliminary

CMC10103NL-33

30V N-Channel MOSFET

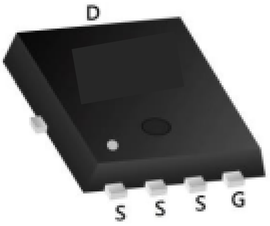
Features

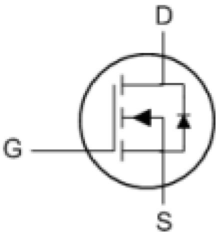
- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Product Summary

Item	Typical Value	Unit
V_{DS}	30	V
$R_{DS(on)}$ @ V_{GS} =4.5V (Max)	5.5	mΩ
I_D	64	A

PRPAK3x3 Pin Description





Absolute Ratings (T$_A$ = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, T_C = 25°C	I_D	64	A
Single Pulse Avalanche Energy	EAS	115	mJ
Total Power Dissipation	P_D	35.7	W
Junction Temperature Maximum	T_{JMAX}	150	°C
Storage Temperature	$T_{Storage}$	-55 to 155	°C

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	°C/W

Electrical Characteristics

Static (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250uA	30	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	---	---	1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	---	---	±100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	---	4.8	5.5	Ω
		V_{GS} = 4.5V, I_D = 10A	---	6.5	9	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	1.5	---	2.5	V
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V	---	---	1	V

Dynamic (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15 V, f = 1MHz	---	2295	---	pF
Output Capacitance	C_{oss}		---	267	---	
Reverse Transfer Capacitance	C_{rss}		---	210	---	
Total Gate Charge	Q_g	V_{DS} = 15V, I_D = 15A, V_{GS} = 4.5V	---	20	---	nC
Gate-Source Charge	Q_{gs}		---	7.6	---	
Gate-Drain Charge	Q_{gd}		---	7.2	---	
Turn-on delay time	$T_{d(on)}$	V_{DS} = 15V, I_D = 15A, V_{GS} = 10V, R_G = 3.3Ω	---	7.8	---	nS
Rise time	T_r		---	15	---	
Turn-off delay time	$T_{d(off)}$		---	37.3	---	
Fall time	T_f		---	10.6	---	

Typical Characteristics

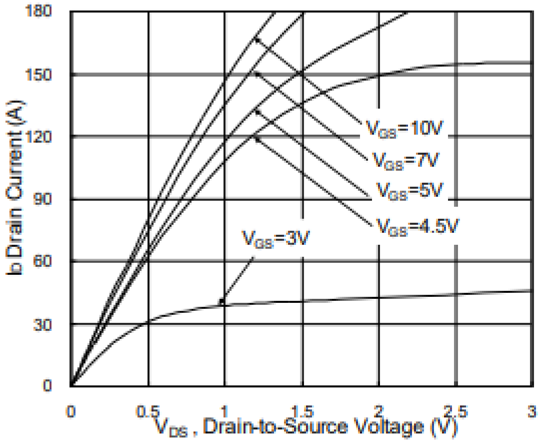


Fig.1 Typical Output Characteristics

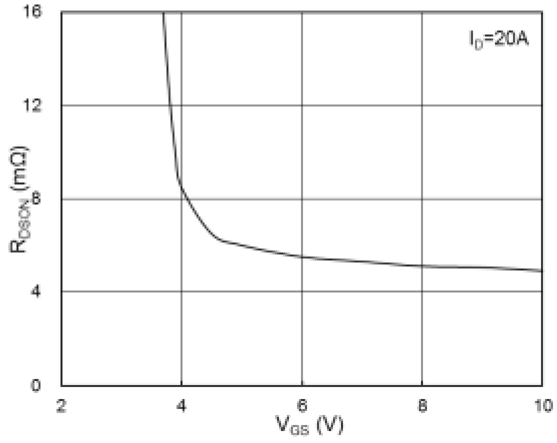


Fig.2 On-Resistance vs G-S Voltage

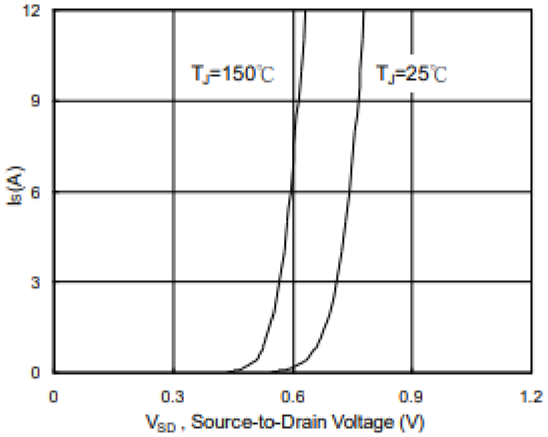


Fig.3 Source Drain Forward Characteristics

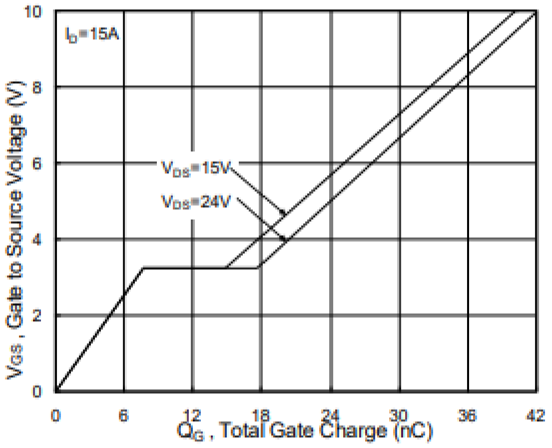


Fig.4 Gate-Charge Characteristics

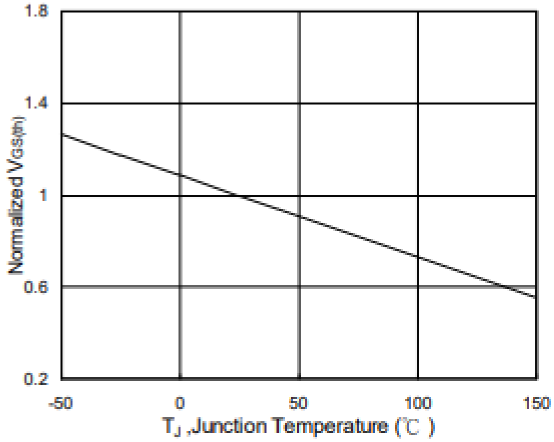


Fig.5 Normalized $V_{GS(th)}$ vs T_J

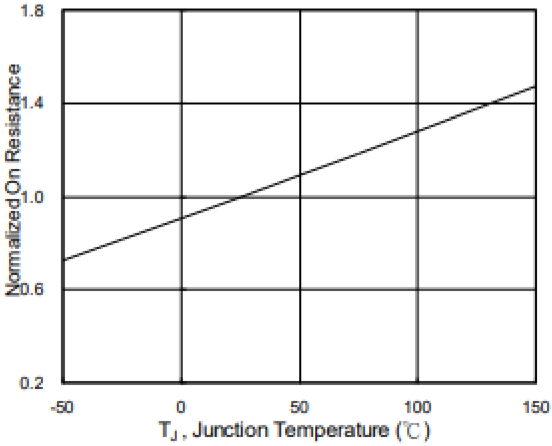


Fig.6 Normalized R_{DSON} vs T_J

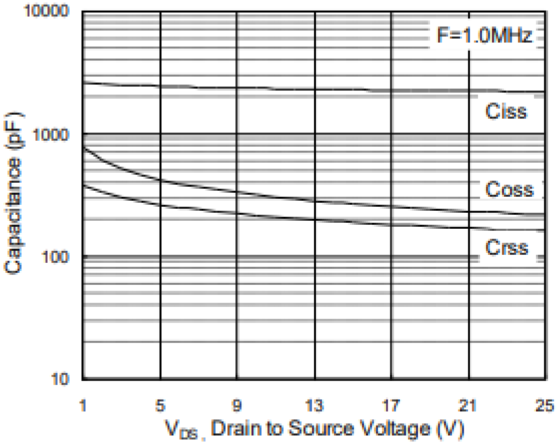


Fig.7 Capacitance

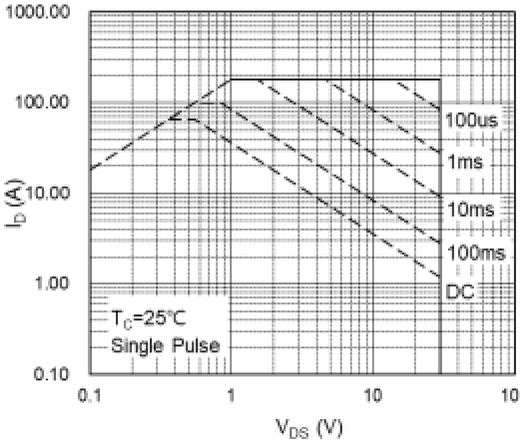


Fig.8 Safe Operating Area

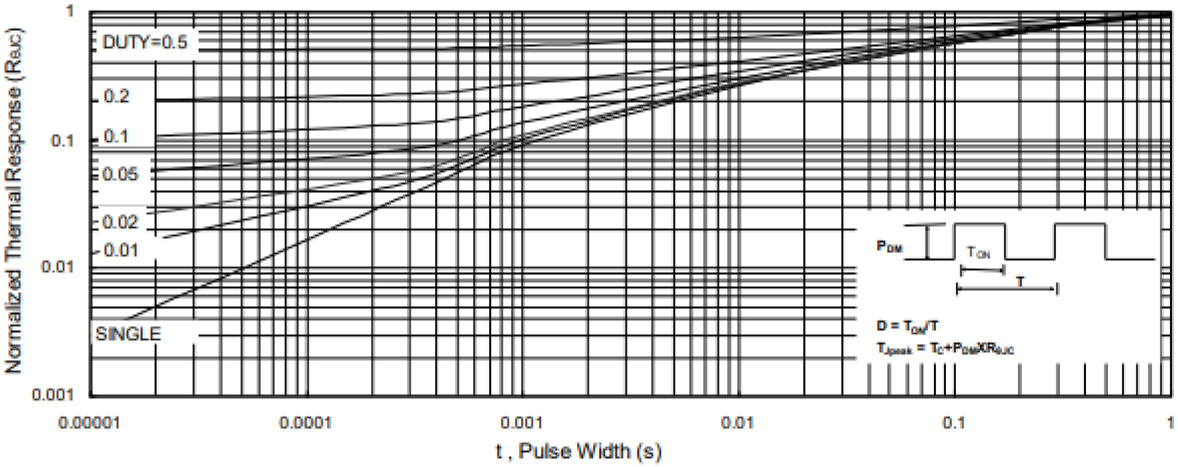


Fig.9 Normalized Maximum Transient Thermal Impedance

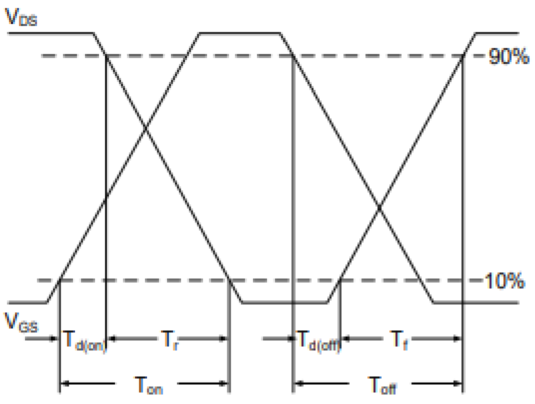


Fig.10 Switching Time Waveform

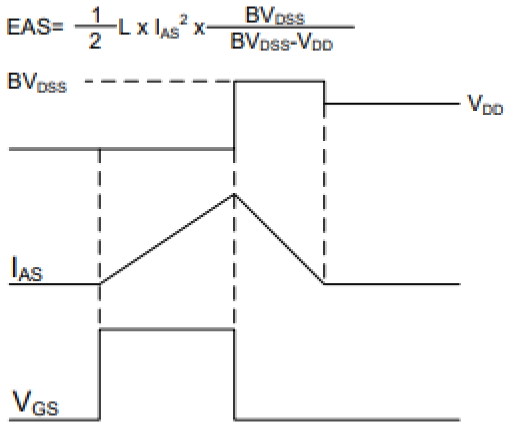
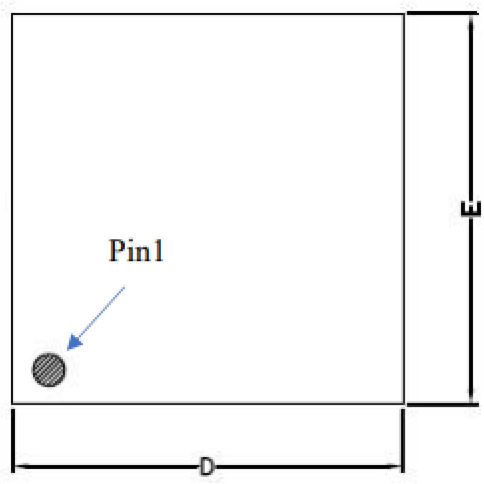
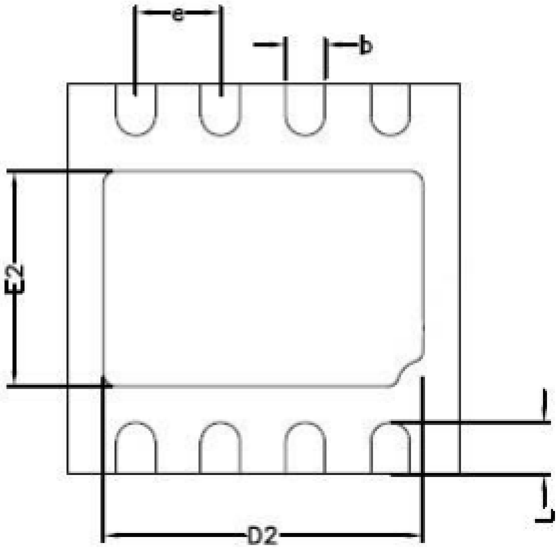


Fig.11 Unclamped Inductive Switching Waveform

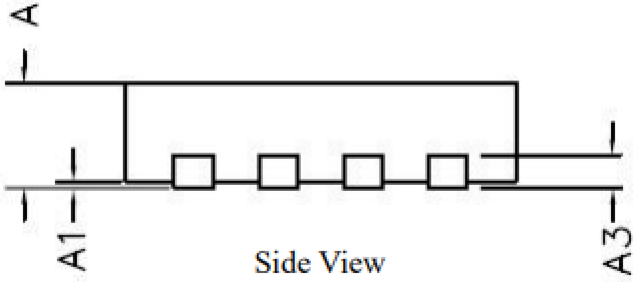
DFN3x3 Package Outline



Top View



Bottom View



Side View

SYMBOL	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	----	0.05
A3	0.2 REF		
D	2.95	3.00	3.05
E	2.95	3.00	3.05
b	0.25	0.30	0.35
L	0.30	0.40	0.50
D2	2.30	2.45	2.55
E2	1.50	1.65	1.75
e	0.65BSC		