preliminary

CMY24904NL-33

40V N-Channel MOSFET

Features

- Advanced Trench Power MOSFET technology
- Low $R_{DS(on)}$
- High Speed switching
- 100% EAS Guaranteed
- Green product

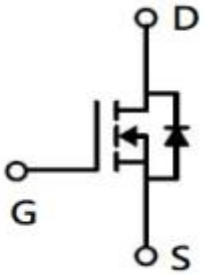
Product Summary

Item	Typical Value	Unit
V_{DS}	40	V
$R_{DS(on)}$ @ V_{GS} =10V (Max)	3.9	mΩ
I_D	50	A

Applications

- Motor Control
- Synchronous rectifier applications
- DC/DC in Telecoms and Industrial

PDFN3x3 Pin Description



Absolute Ratings (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Single Pulse UIS Capability, 0.1mH	E_{AS}	48	mJ
Continuous Drain Current, T_C = 25°C/100°C	I_D	50/39	A
Pulsed Drain Current	I_{DM}	200	A
Maximum Power Dissipation, T_C = 25°C	P_D	62.5	W
Junction Temperature Maximum	T_{JMAX}	150	°C
Storage Temperature	$T_{Storage}$	-55 to 150	°C

Absolute Ratings

Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	55	°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	40	---	---	V
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	---	---	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 32V, V_{GS} = 0V,T_J=25℃	---	---	1	uA
		V_{DS} = 32V, V_{GS} = 0V,T_J=55℃	---	---	5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	---	---	3.9	mΩ
		V_{GS} = 4.5V, I_D = 20A	---	---	6.0	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	1.2	---	2.3	V
Gate Resistance	R_G	V_{GS} = 0V, V_{DS}Open, f=1MHz	---	1.5	---	Ω
Dynamic (T_J=25℃ unless otherwise specified)						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 20V, f = 1MHz	---	1587	---	pF
Output Capacitance	C_{oss}		---	491	---	
Reverse Transfer Capacitance	C_{rss}		---	61	---	
Total Gate Charge	Q_g	V_{DS} = 20V, I_D = 20A, V_{GS} = 10V	---	24.9	---	nC
Gate-Source Charge	Q_{gs}		---	6.5	---	
Gate-Drain Charge	Q_{gd}		---	2.6	---	
Turn-on delay time	$T_{d(on)}$	V_{DS} = 20V, I_D = 20A, V_{GS} = 10V, R_G = 3Ω,	---	23.8	---	ns
Rise time	T_r		---	11.5	---	
Turn-off delay time	$T_{d(off)}$		---	39	---	
Fall time	T_f		---	14	---	
Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_F = 1A	---	---	1.2	V

Typical Characteristics

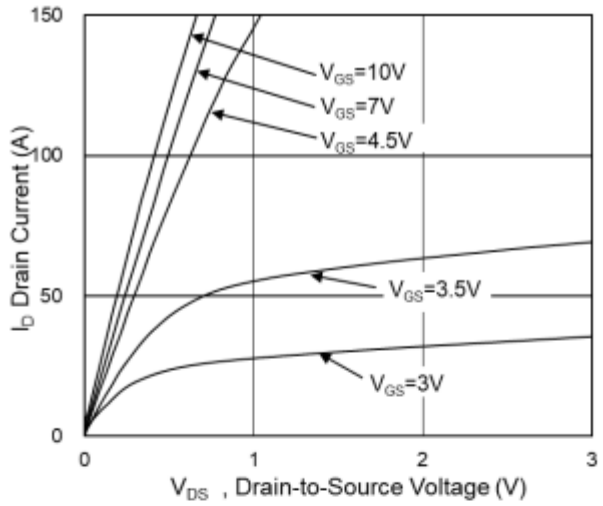


Fig.1 Typical Output Characteristics

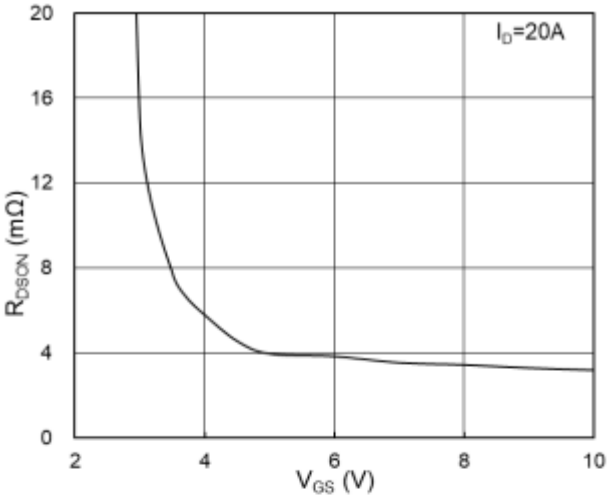


Fig.2 On-Resistance vs G-S Voltage

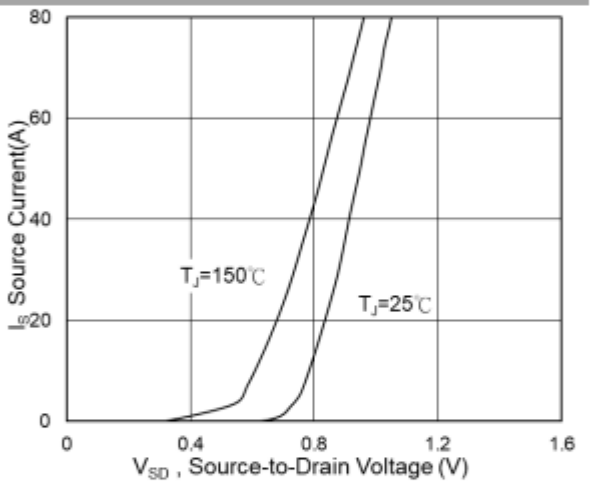


Fig.3 Source Drain Forward Characteristics

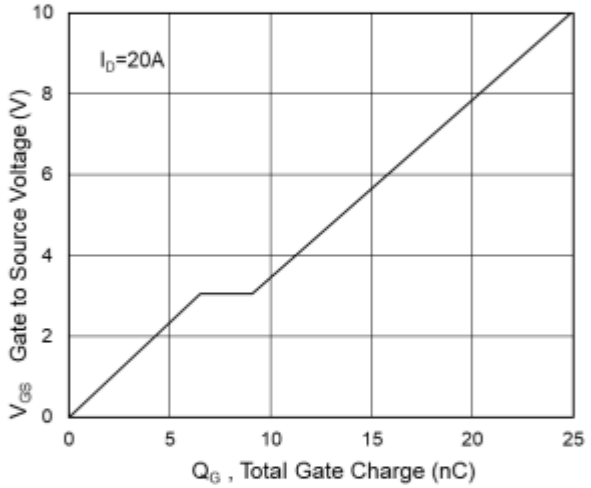


Fig.4 Gate-Charge Characteristics

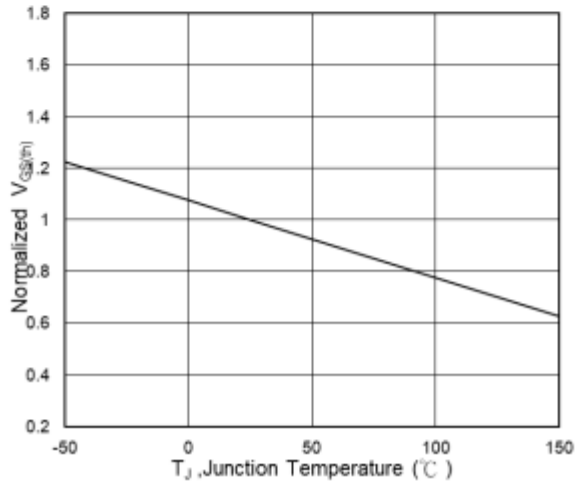


Fig.5 Normalized $V_{GS(th)}$ vs T_J

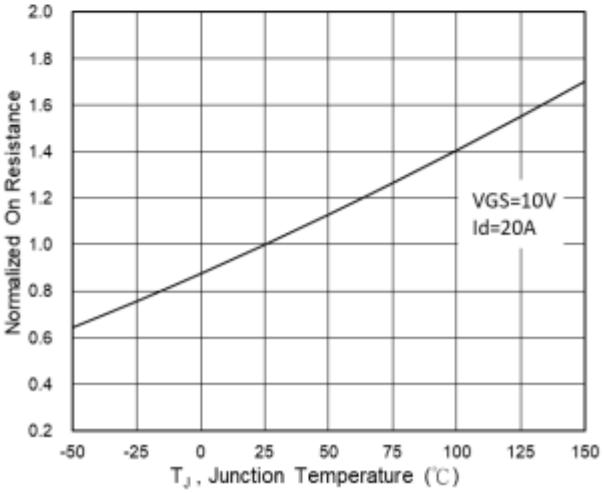


Fig.6 Normalized R_{DSON} vs T_J

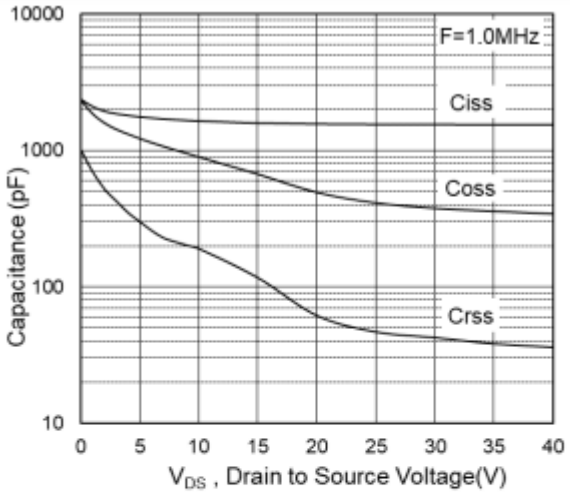


Fig.7 Capacitance

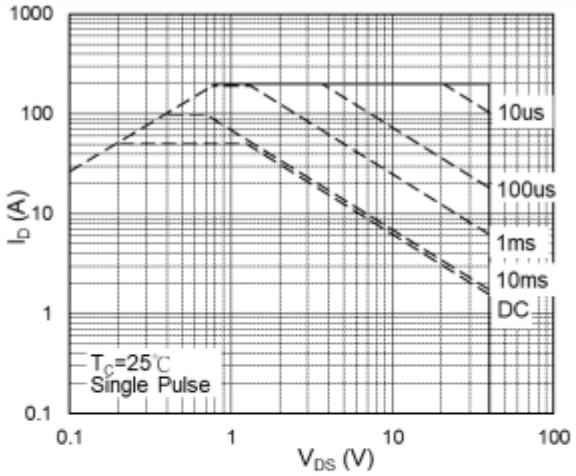


Fig.8 Safe Operating Area

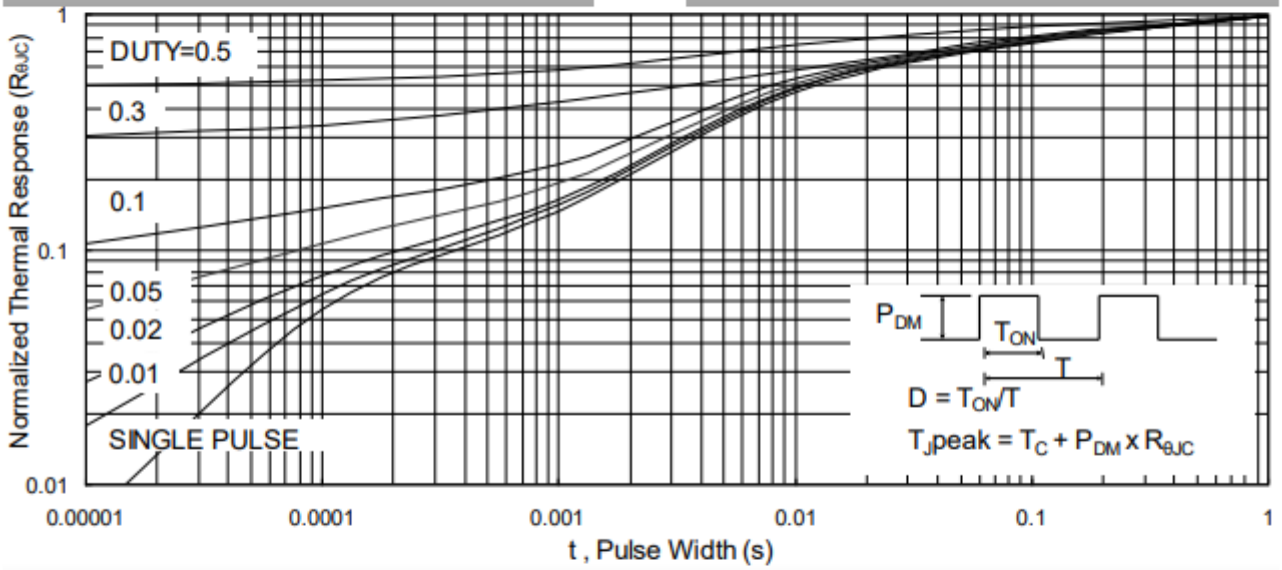


Fig.9 Normalized Maximum Transient Thermal Impedance

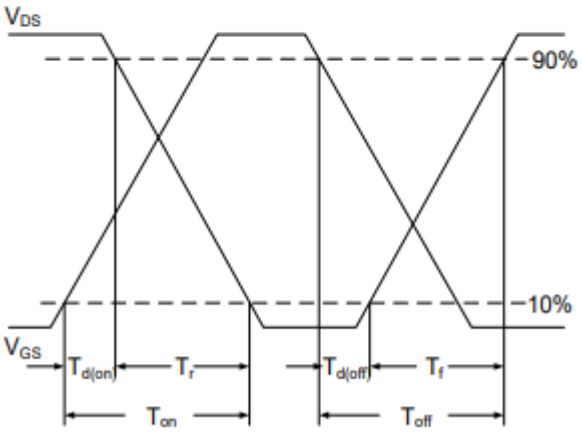


Fig.10 Switching Time Waveform

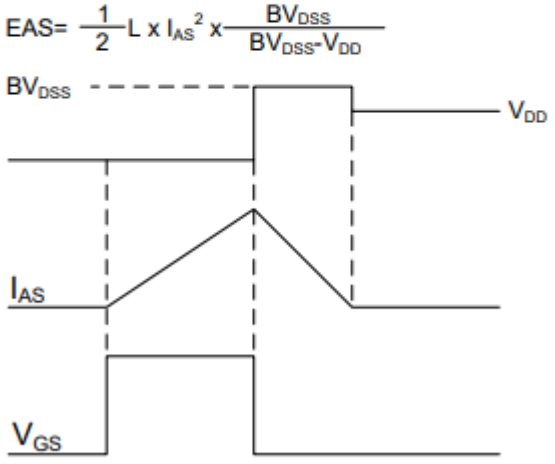
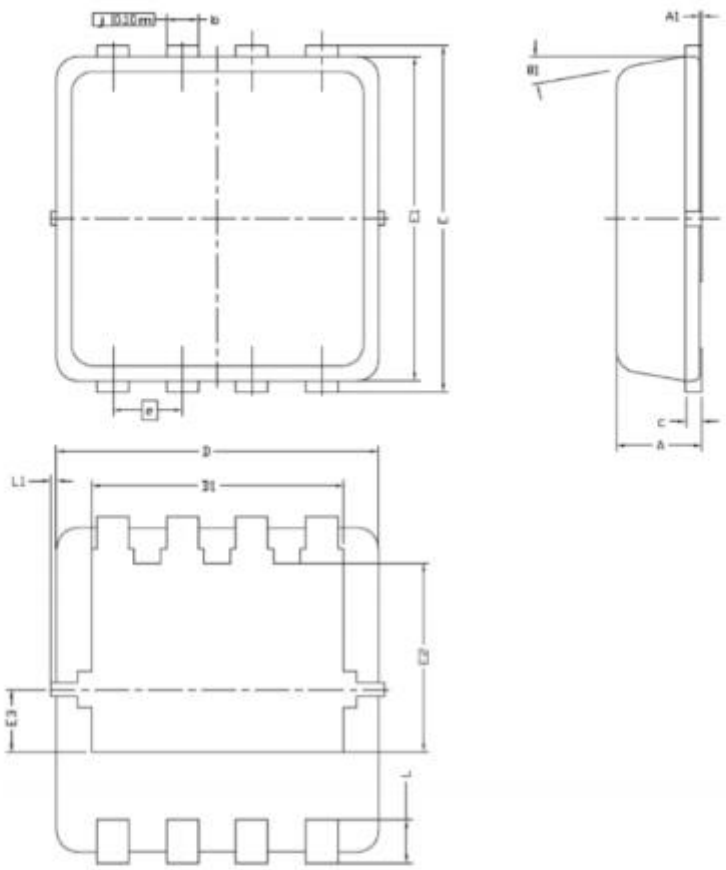


Fig.11 Unclamped Inductive Waveform

PDFN3x3 PACKAGE INFORMATION



DIM.	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.80	0.900	0.0276	0.0315	0.0354
A1	0.00	---	0.05	0.000	---	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	---	0.100	0	---	0.004
θ1	0°	10°	12°	0°	10°	12°