

preliminary

CMY15006NL-P33

60V N-Channel MOSFET

Features

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

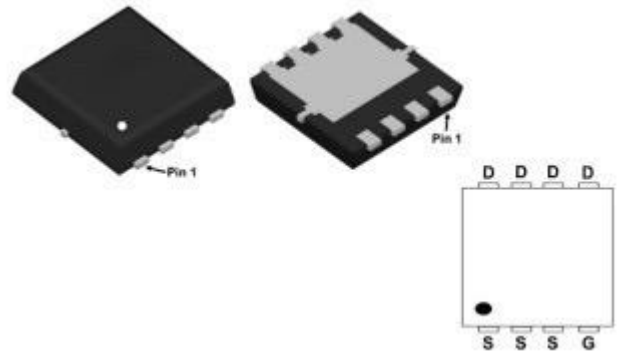
Applications

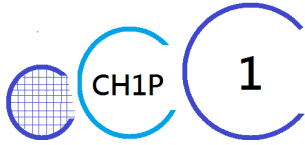
- Motor Control
- Synchronous rectifier applications
- DC/DC in Telecoms and Industrial

Product Summary

Item	Typical Value	Unit
V_{DS}	60	V
$R_{DS(on)}$ @ $V_{GS} = 10V$ (Max)	8.5	m Ω
I_D	30	A

PDFN3x3 Pin Description





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Absolute Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulse UIS Capability, 0.1mH	E_{AS}	26.5	mJ
Continuous Drain Current, $T_C = 25^\circ\text{C}/100^\circ\text{C}$	I_D	30/27	A
Pulsed Drain Current	I_{DM}	100	A
Maximum Power Dissipation, $T_C = 25^\circ\text{C}$	P_D	27.7	W
Junction Temperature Maximum	T_{JMAX}	150	$^\circ\text{C}$
Storage Temperature	$T_{Storage}$	-55 to 150	$^\circ\text{C}$

Absolute Ratings

Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	55	$^\circ\text{C}/\text{W}$

Electrical Characteristics

Static (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	60	---	---	V
Gate-Source Leakage	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	---	---	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 48V, V _{GS} = 0V, T _J =25°C	---	---	1	uA
		V _{DS} = 48V, V _{GS} = 0V, T _J =55°C	---	---	5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 15A	---	---	8.5	mΩ
		V _{GS} = 4.5V, I _D = 15A	---	---	12.5	
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	---	1.3	---	Ω
Dynamic (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 30V, f = 1MHz	---	1270	---	pF
Output Capacitance	C _{oss}		---	479	---	
Reverse Transfer Capacitance	C _{rss}		---	40	---	
Total Gate Charge	Q _g	V _{DS} = 30V, I _D = 15A, V _{GS} = 10V	---	15	---	nC
Gate-Source Charge	Q _{gs}		---	3.5	---	
Gate-Drain Charge	Q _{gd}		---	4.2	---	
Turn-on delay time	T _{d(on)}	V _{DS} = 30V, I _D = 15A, V _{GS} = 10V, R _G = 3.3Ω,	---	7	---	ns
Rise time	T _r		---	4.5	---	
Turn-off delay time	T _{d(off)}		---	26	---	
Fall time	T _f		---	5	---	
Reverse Diode Characteristics						
Continuous Source Current	I _S	V _G = V _D = 0V, Force Current	---	---	30	A
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _F = 1A	---	---	1.2	V
Reverse Recovery Time	t _{rr}	I _F = 15A, dI _F /dt=100A/us	---	22	---	ns
Reverse Recovery Charge	Q _{rr}		---	72	---	nC

Typical Characteristics

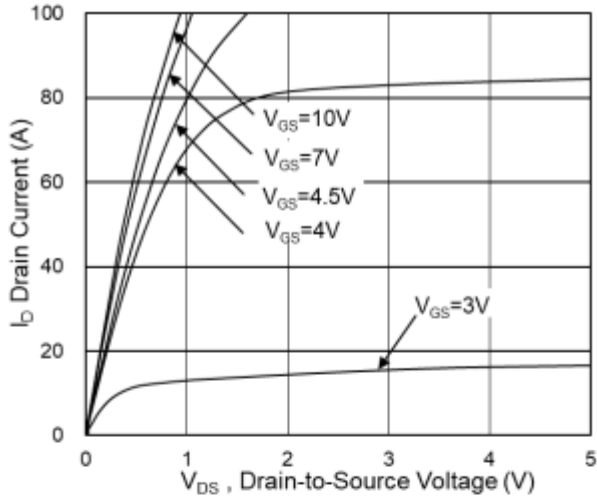


Fig.1 Typical Output Characteristics

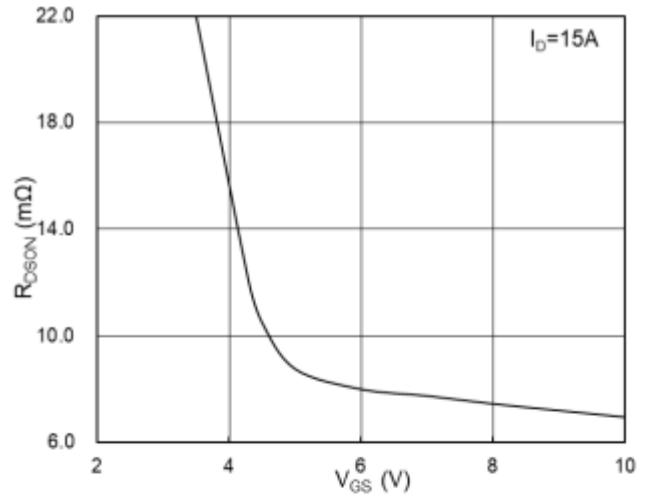


Fig.2 On-Resistance vs G-S Voltage

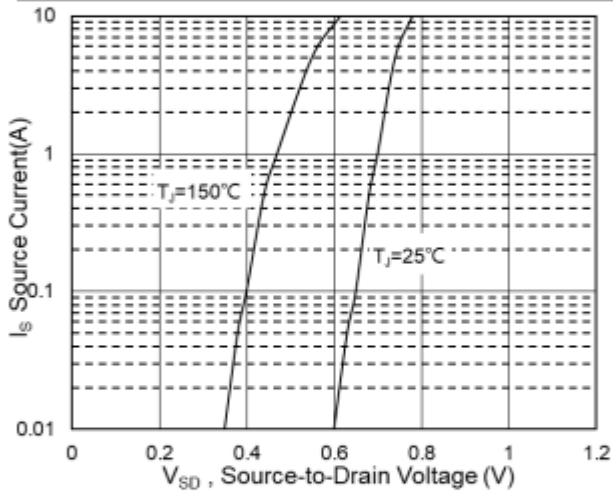


Fig.3 Source Drain Forward Characteristics

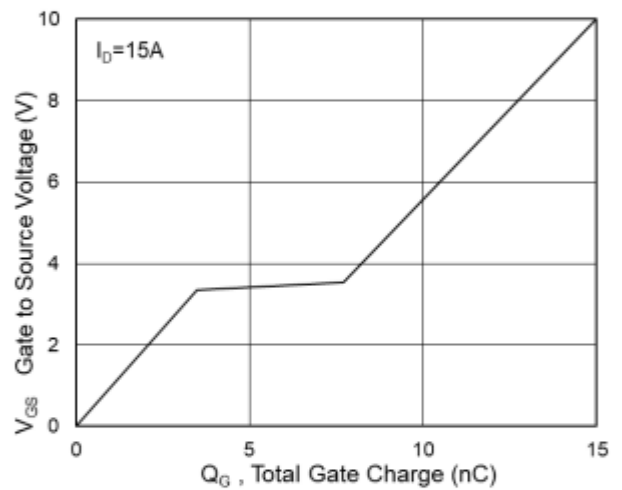


Fig.4 Gate-Charge Characteristics

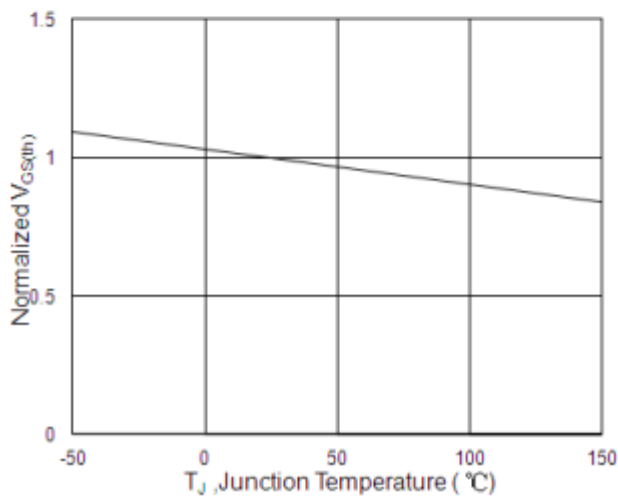


Fig.5 Normalized $V_{GS(th)}$ vs T_J

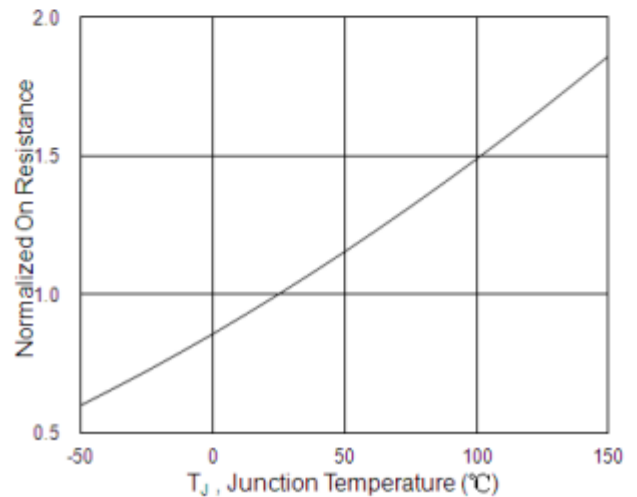


Fig.6 Normalized $R_{DS(on)}$ vs T_J

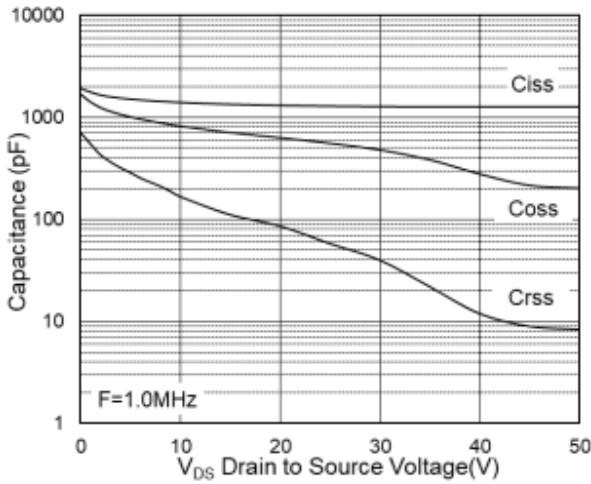


Fig.7 Capacitance

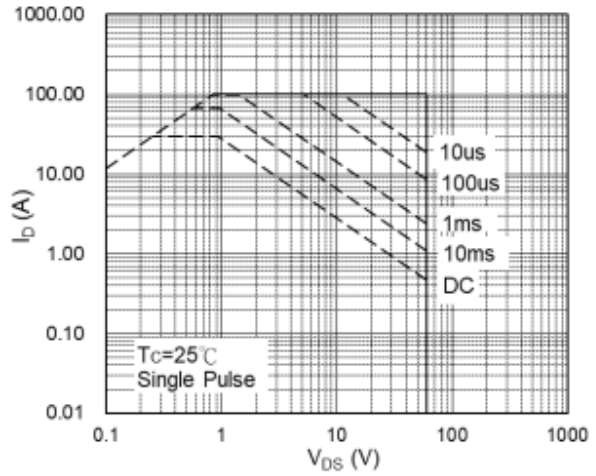


Fig.8 Safe Operating Area

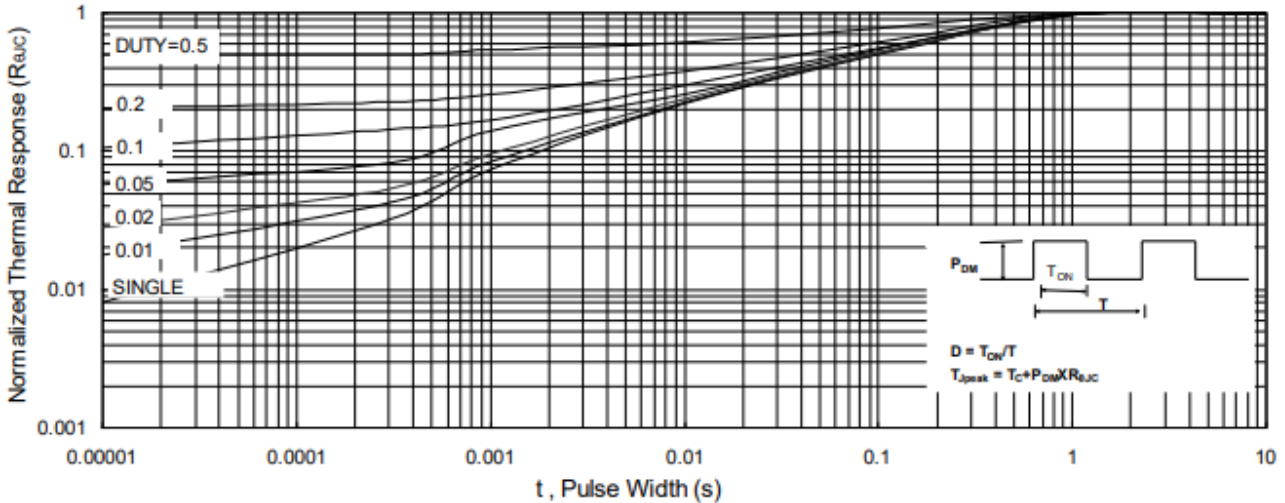


Fig.9 Normalized Maximum Transient Thermal Impedance

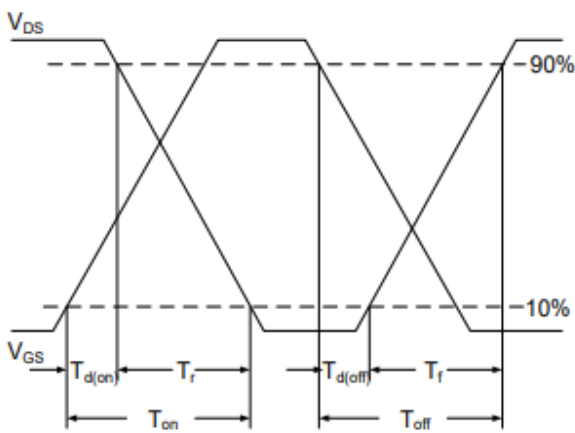


Fig.10 Switching Time Waveform

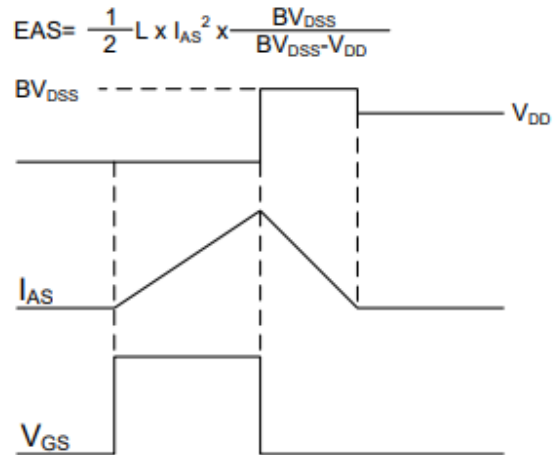
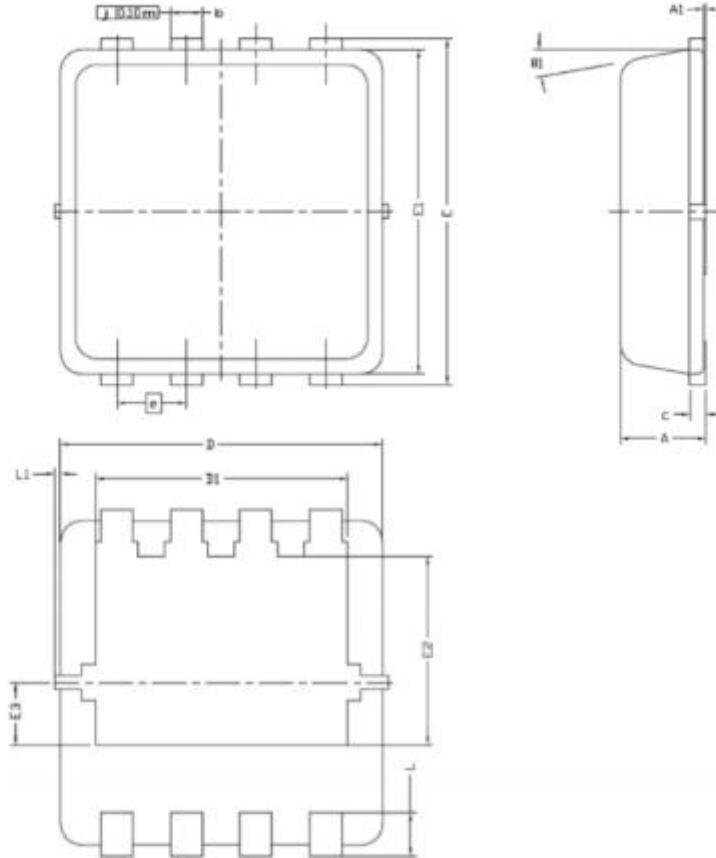


Fig.11 Unclamped Inductive Switching Waveform

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°