

APG080N12

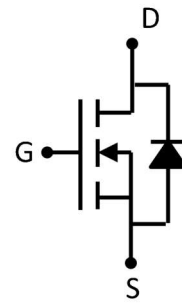
N-Channel Enhancement Mosfet

AIPOWER

DATA SHEET

Feature

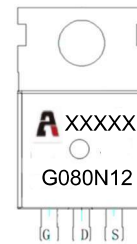
- 120V,106A
 $R_{DS(ON)} < 8.0m\Omega @ V_{GS}=10V$ (TYP:6.5m Ω)
- Split Gate Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge



Schematic diSgram

Application

- PWM applications
- Load Switch
- Power management



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G080N12	APG080N12	TO-220	-	-	1000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a=25^\circ\text{C}$)	I_D	106	A
Continuous Drain Current ($T_a=100^\circ\text{C}$)	I_D	67	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	424	A
Singel Pulsed Avalanche Energy ⁽²⁾	E_{AS}	480	mJ
Power Dissipation	P_D	147	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.85	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

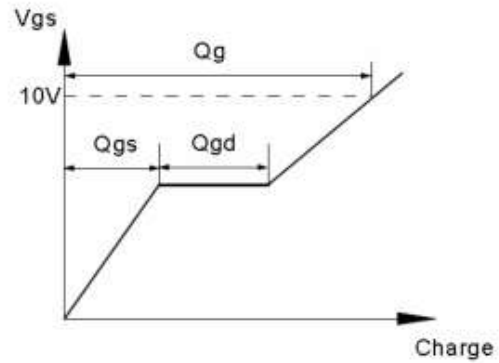
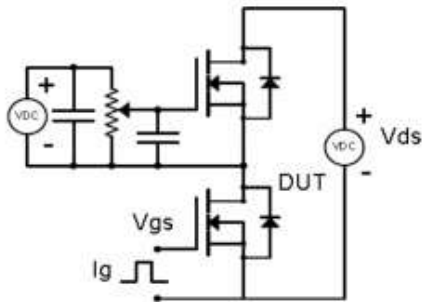
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	120	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =120V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =± 20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =40A	-	6.5	8.0	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =60V, V _{GS} =0V, f =1MHz	-	3770	-	pF
Output Capacitance	C _{oss}		-	352	-	
Reverse Transfer Capacitance	C _{rss}		-	17	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =50V, I _D =50A, V _{GS} =10V, R _G =3Ω	-	22	-	ns
Turn-on rise time	t _r		-	18	-	
Turn-off delay time	t _{d(off)}		-	49	-	
Turn-off fall time	t _f		-	19	-	
Total Gate Charge	Q _g	V _{DS} =50V, I _D =50A, V _{GS} =10V	-	56	-	nC
Gate-Source Charge	Q _{gs}		-	12	-	
Gate-Drain Charge	Q _{gd}		-	14	-	
Reverse Recovery Chrage	Q _{rr}	I _F =30A, di/dt=100A/us		102		nC
Reverse Recovery Time	T _{rr}	I _F =30A, di/dt=100A/us		66		ns
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =50A	-	-	1.3	V
Diode Forward current ⁽⁴⁾	I _S		-	-	106	A

Notes:

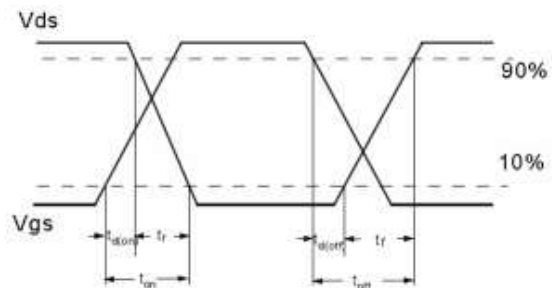
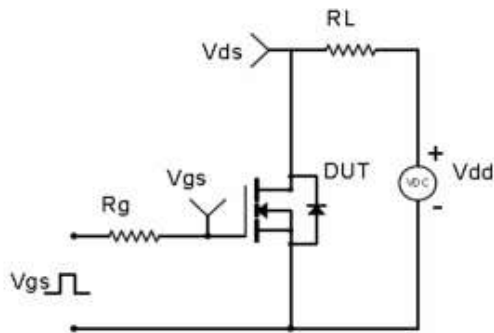
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:T_J=25°C, V_{DD}=50V, R_G=25 Ω ,L=0.5Mh
3. Pulse Test: pulse width≤300μs, duty cycle≤2%
4. Surface Mounted on FR4 Board, t≤10 sec

Test Circuit & Waveform

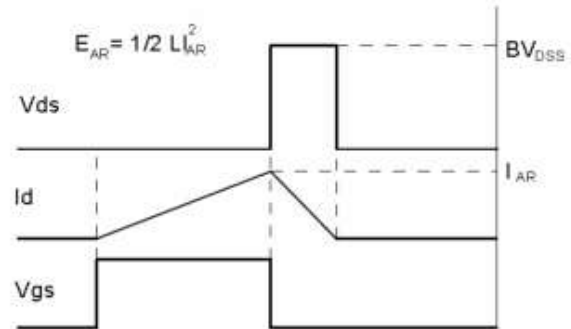
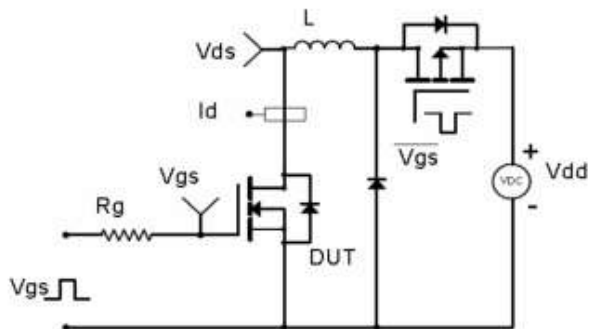
Gate Charge Test Circuit & Waveform



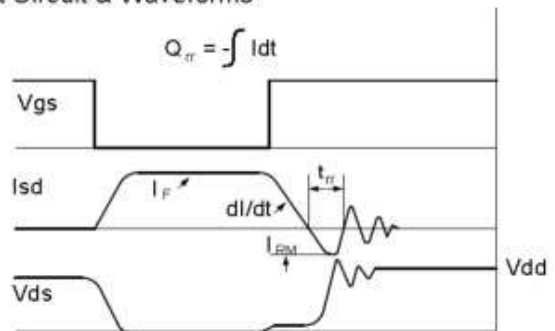
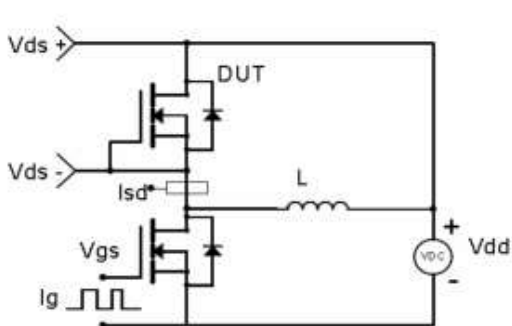
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Performance Characteristics

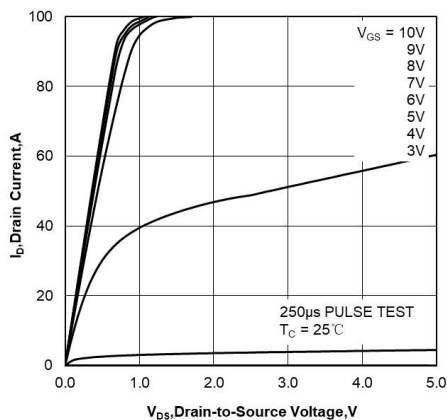


Figure 1. Output Characteristics

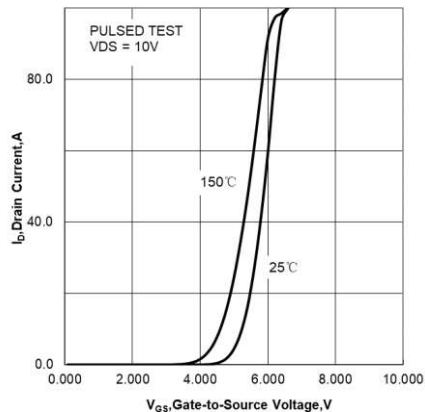


Figure 2. Transfer Characteristics

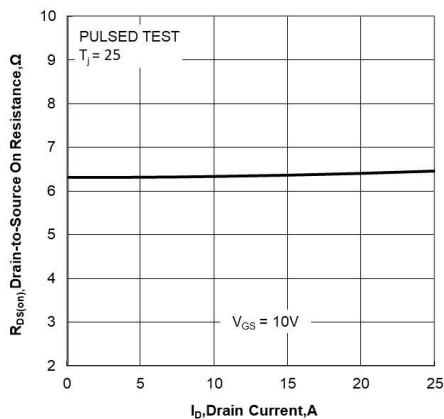


Figure 3. Drain-to-Source On Resistance vs Drain Current

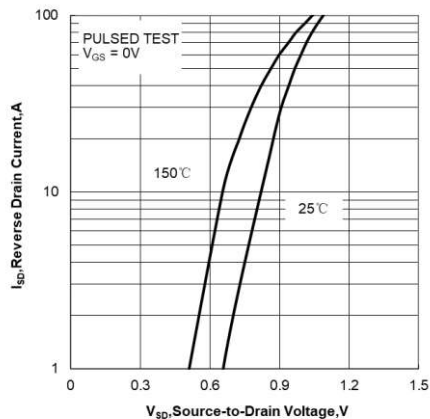


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

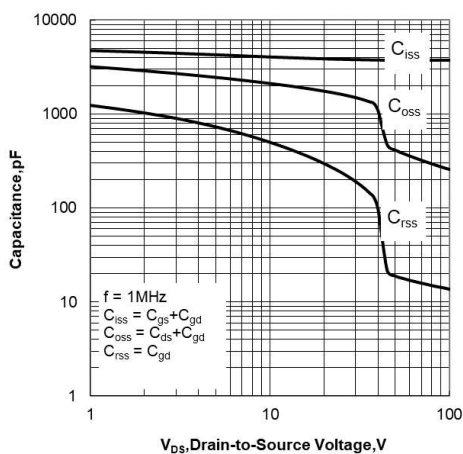


Figure 5. Capacitance Characteristics

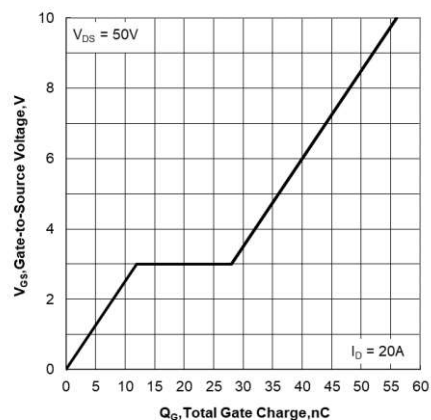


Figure 6. Gate Charge Characteristics

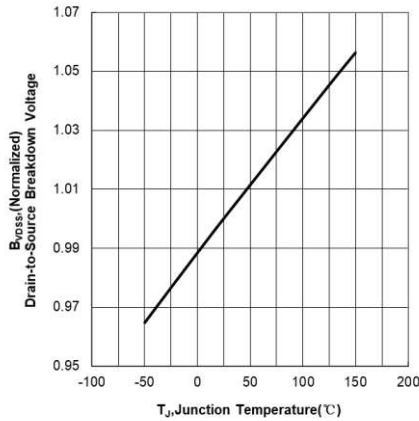


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

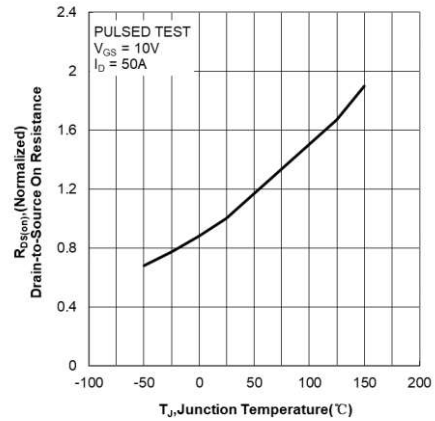


Figure 8. Normalized On Resistance vs Junction Temperature

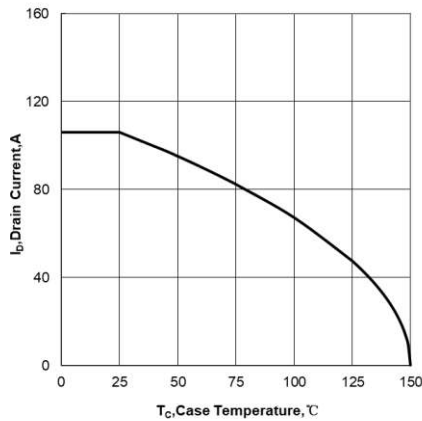


Figure 9. Maximum Continuous Drain Current vs Case Temperature

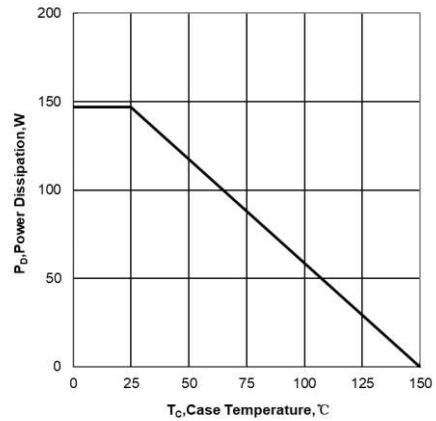


Figure 10. Maximum Power Dissipation vs Case Temperature

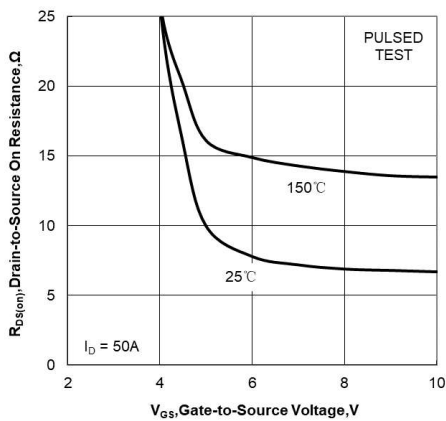


Figure 11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

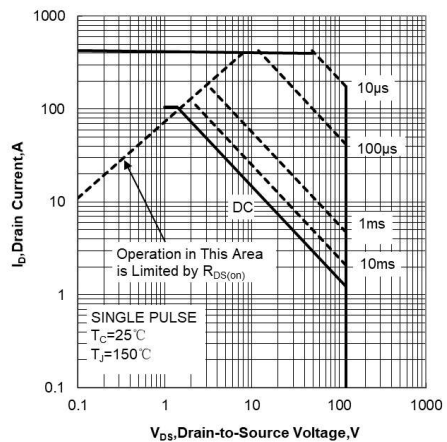


Figure 12. Maximum Safe Operating Area

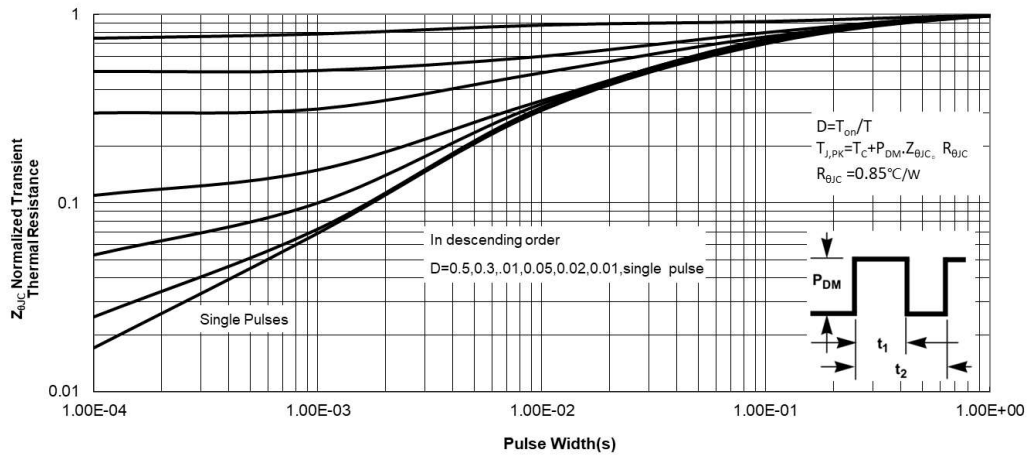
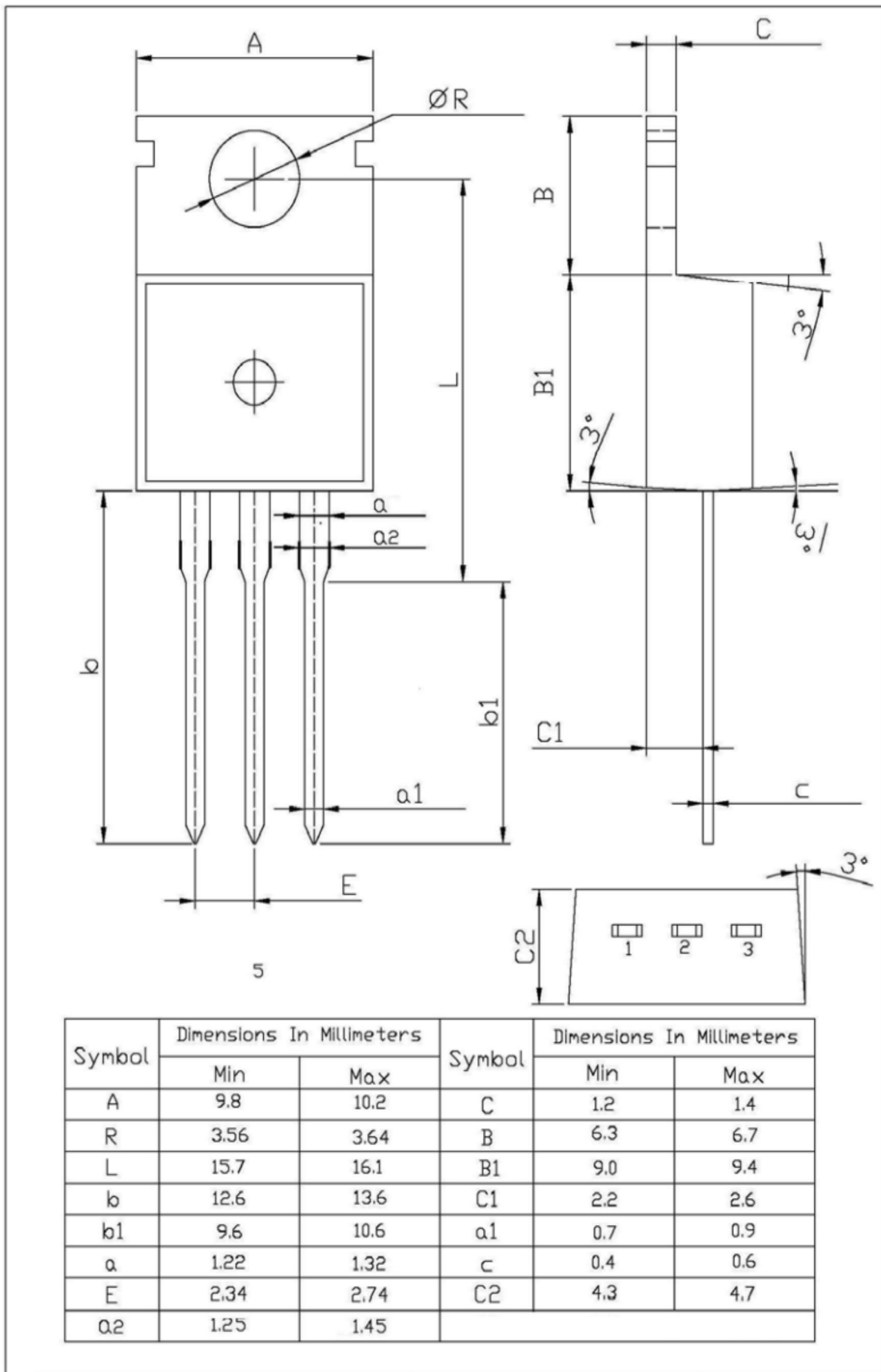


Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO-220 Package Information



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