

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
30	2.2 @ $V_{GS} = 10V$	110 ⁽¹⁾

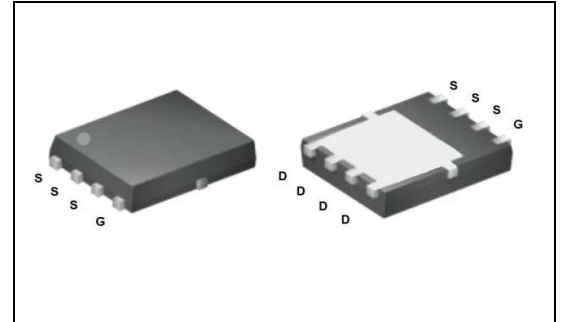
Features

- Low $R_{DS(on)}$ and gate charge
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

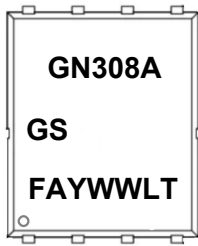
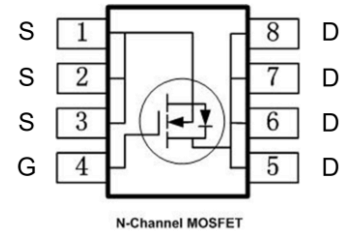
Application

- Power management
- SMPS and general purpose applications
- Uninterruptible Power Supply
- Load Switch

PDFN5060



Equivalent circuit



PDFN5060

NOTE:
 LOGO - GS
 GN308A- Part number code
 F - Fab location code
 A - Assembly location code
 Y - Year code
 WW - Week code
 L&T - Assembly lot code

Absolute maximum rating@25°C

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	110	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	72	A
I_{DM}	Pulsed Drain Current ²	440	A
EAS	Single Pulse Avalanche Energy ³	435	mJ
I_{AS}	Avalanche Current	41.5	A
$P_D@T_C=25^\circ C$	Total Power Dissipation ⁴	70	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristic

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	1.8	°C/W
Thermal resistance, junction-to-ambient ⁽⁴⁾	Steady state	$R_{\theta JA}$	58	

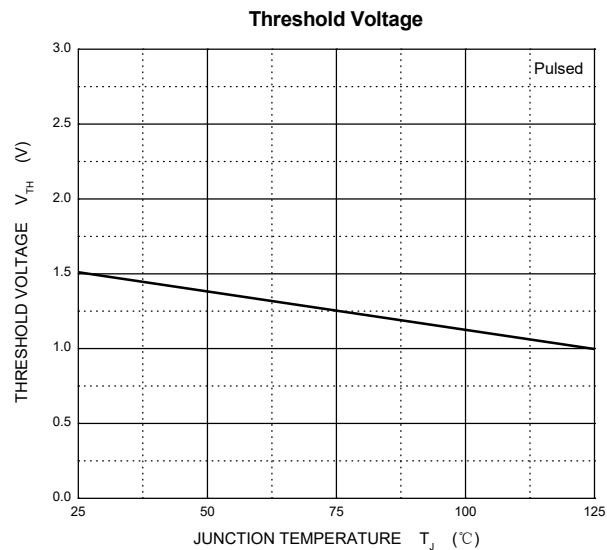
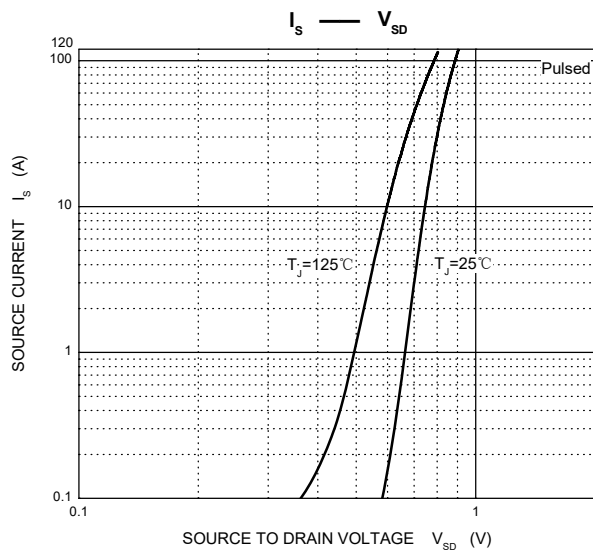
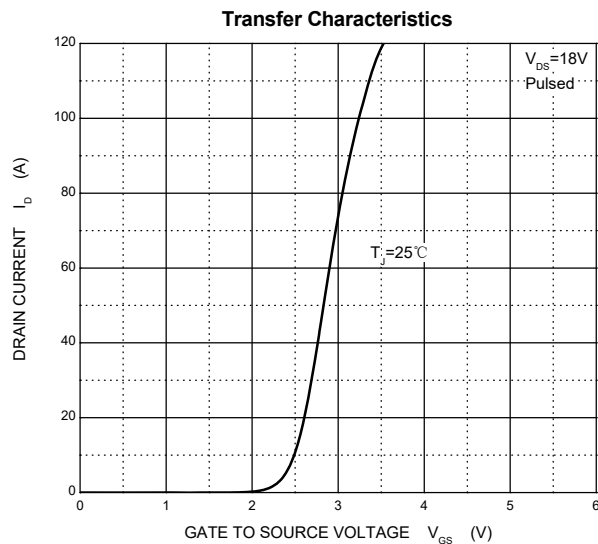
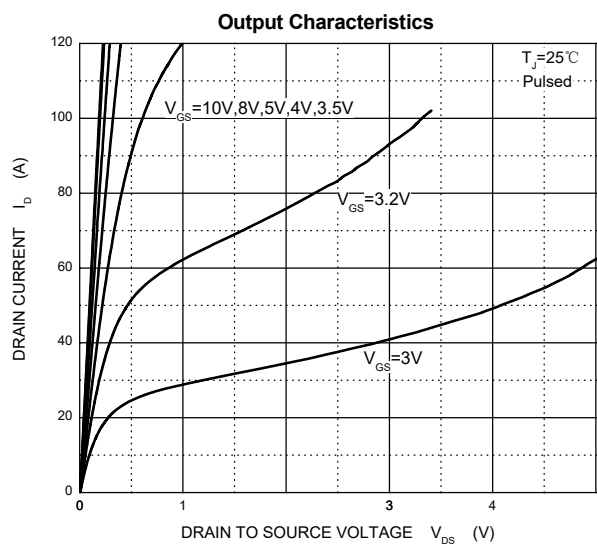
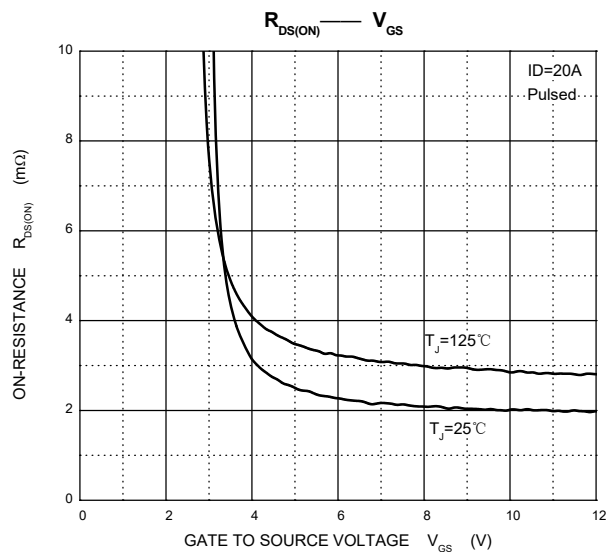
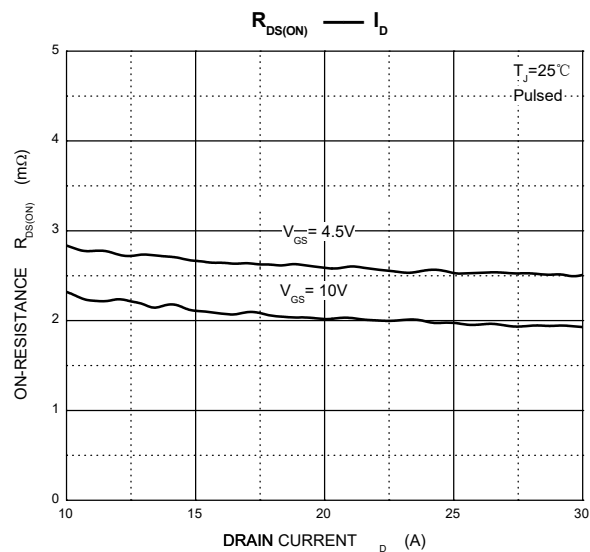
Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0, I _D = 250 μA	30			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.2	1.45	2.0	V
Gate-body leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
Drain-source on-resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 30 A		1.8	2.2	mΩ
	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 30 A		2.36	2.8	mΩ
Forward transconductance ⁽⁵⁾	g _{fs}	V _{DS} = 5 V, I _D = 30 A		28		S
Gate resistance	R _g	f = 1 MHz		2.5		Ω
Dynamic ⁽⁵⁾						
Total gate charge V _{GS} = 10V	Q _g	V _{DS} = 15 V, I _D = 30 A, V _{GS} = 10 V		95		nC
Gate-source charge	Q _{gs}			11		
Gate-drain charge	Q _{gd}			18		
Turn-on delay time	t _{d(on)}	V _{DS} = 15 V, I _D = 30 A, V _{GS} = 10 V, R _{GEN} = 2.9 Ω		20		ns
Rise time	t _r			9		
Turn-off delay time	t _{d(off)}			84		
Fall time	t _f			18		
Input capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		4950		pF
Output capacitance	C _{oss}			520		
Reverse transfer capacitance	C _{rss}			465		
Diode Characteristics						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current ^{1,6}	I _S	V _G =V _S =0V , Force Current	---	---	110	A
Pulsed Source Current ^{2,6}	I _{SM}		---	---	440	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V , I _S =20A , T _J =25°C	---	---	1.2	V

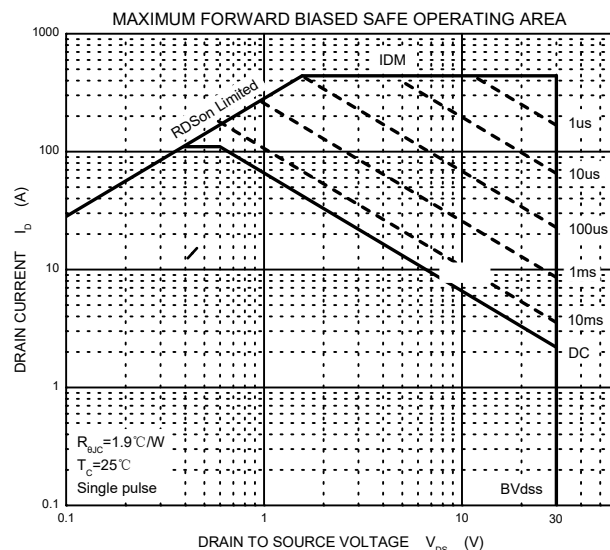
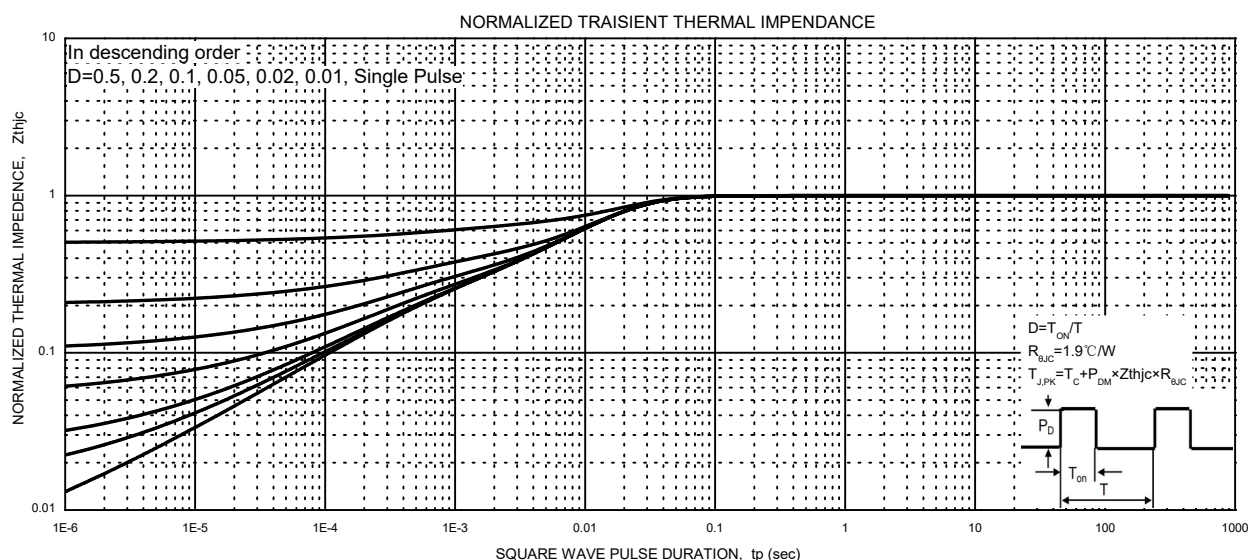
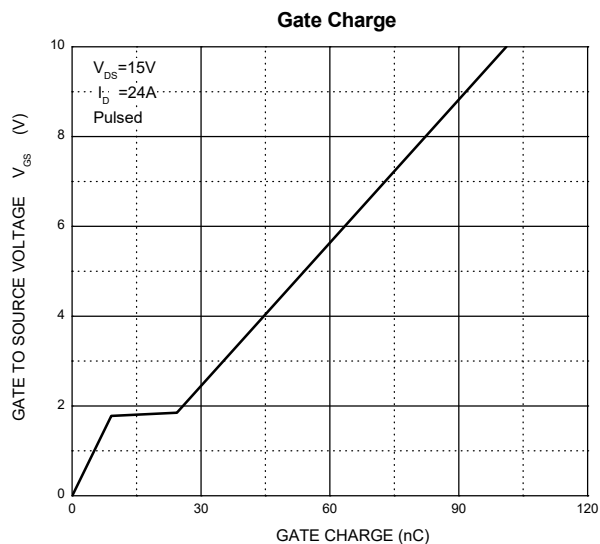
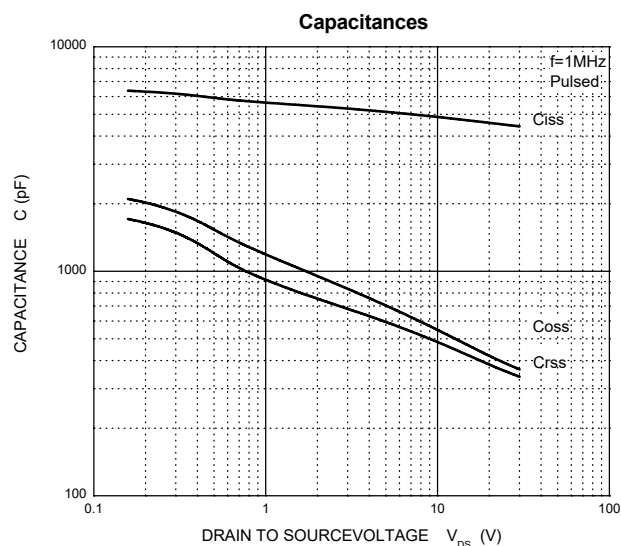
Notes

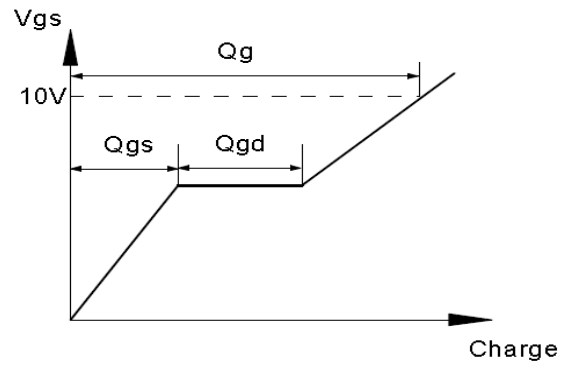
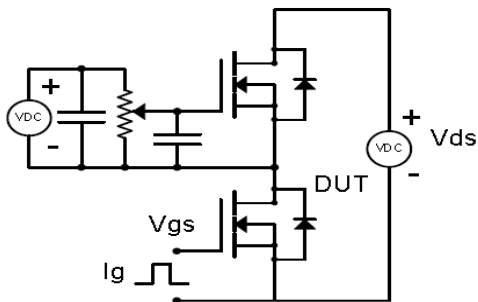
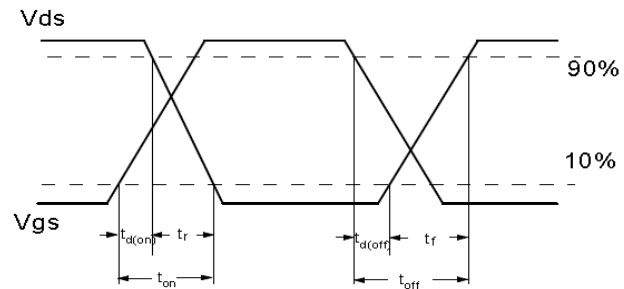
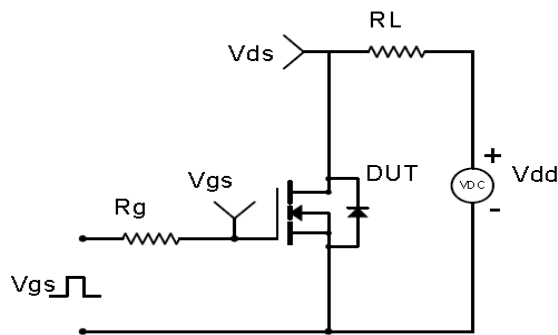
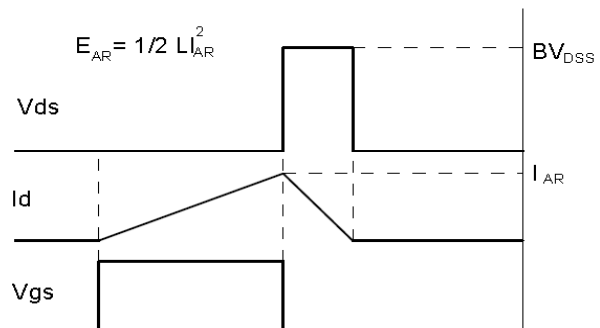
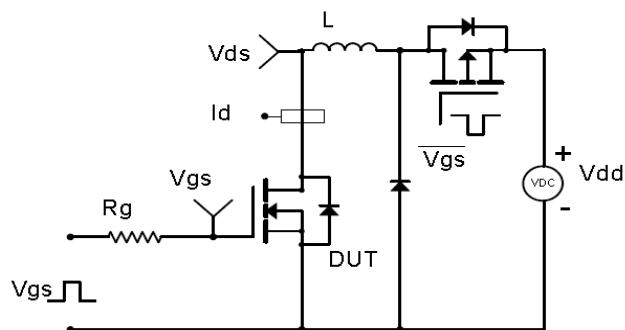
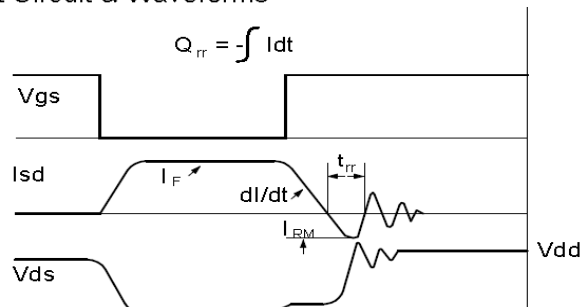
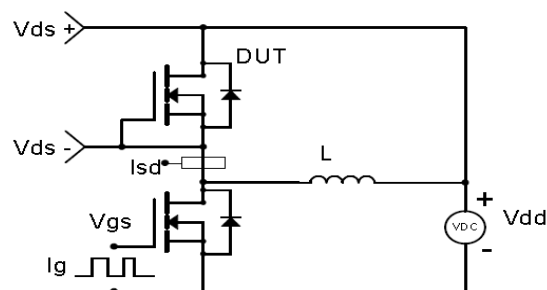
- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, t<10sec.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.5mH,I_{AS}=75A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.Guaranteed by design, not subject to production testing.
- 6.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

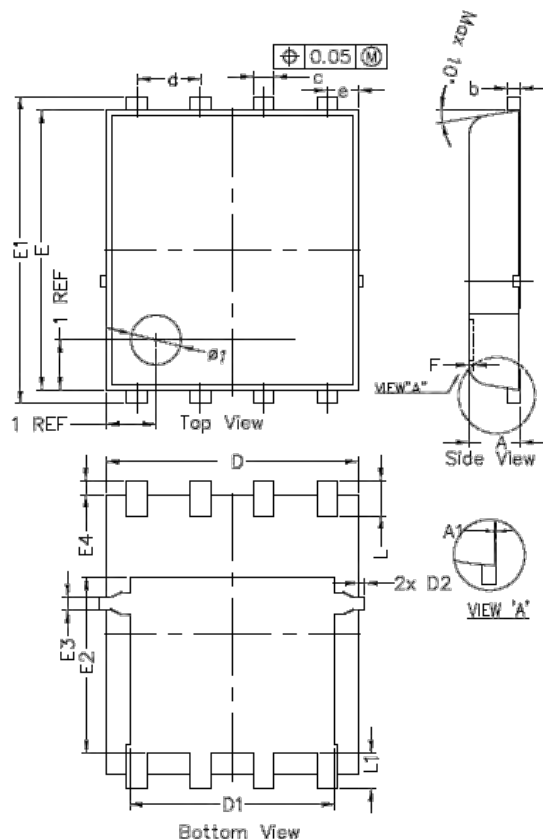


Typical Performance Characteristics



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


Outline Drawing PDFN5060



Dim	Millimeters		
	Min	Nom	Max
A	0.900	1.000	1.100
A1	0.000	---	0.050
b	0.246	0.254	0.312
c	0.310	0.410	0.510
d	1.27BSC		
D	4.950	5.050	5.150
D1	4.000	4.100	4.200
D2	---	---	0.125
e	0.62BSC		
E	5.500	5.600	5.700
E1	6.050	6.150	6.250
E2	3.425	3.525	3.625
E3	0.150	0.250	0.350
E4	0.175	0.275	0.375
F	---	---	0.100
L	0.500	0.600	0.700
L1	0.600	0.700	0.800

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