



30V/60A N-Channel Advanced Power MOSFET

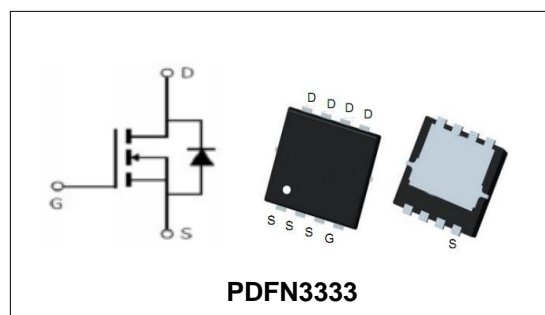
Features

- Improved dv/dt Capability, High Ruggedness.
- Maximum Junction Temperature Range (150°C)

BVDSS	30	V
ID	60	A
RDSON@VGS=10V	4.5	mΩ
RDSON@VGS=4.5V	7.7	mΩ

Applications

- High Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others



Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PTQ3060	PDFN3333	PTQ3060	13inch	5000PCS	50000PCS

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	30	V	
V_{GS}	Gate-Source Voltage	±20	V	
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_S	Diode Continuous Forward Current	TC =25°C	60	A
Mounted on Large Heat Sink				
EAS	Avalanche Energy, Single Pulsed (Note 1)	85	mJ	
I_{DM}	Pulse Drain Current Tested (Silicon Limit) (Note2)	TC =25°C	240	A
I_D	Continuous Drain current	TC =25°C	60	A
P_D	Maximum Power Dissipation	TC =25°C	37	W
$R_{θJC}$	Thermal Resistance Junction-to-Case (Note3)	3.38	°C/W	



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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	VDS=24V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note4)	VGS=10V, ID=20A	--	4.5	6.5	mΩ
		VGS=4.5V, ID=10A	--	7.7	9	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note5)						
C _{iss}	Input Capacitance	VDS=15V, VGS=0V, F=1MHz	--	1690	--	pF
C _{oss}	Output Capacitance		--	248	--	pF
C _{rss}	Reverse Transfer Capacitance		--	225	--	pF
Q _g	Total Gate Charge	VDS=15V, ID=20A, VGS=10V	--	15	--	nC
Q _{gs}	Gate-Source Charge		--	30	--	nC
Q _{gd}	Gate-Drain Charge		--	8	--	nC
Switching Characteristics (Note5)						
t _{d(on)}	Turn-on Delay Time	VDS=15V, ID=20A, RG=4.7Ω, VGS=10V	--	28	--	nS
t _r	Turn-on Rise Time		--	11	--	nS
t _{d(off)}	Turn-off Delay Time		--	12	--	nS
t _f	Turn-off Fall Time		--	9	--	nS
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	IS=30A,VGS=0V	--	0.8	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A,VGS=0, dI/dt=100A/us	--	28	--	nS
Q _{rr}	Reverse Recovery Charge		--	18	--	nC

Note:

- Limited by T_{Jmax}, starting T_J = 25° C, R_G = 25Ω, V_D = 15V, V_{GS} = 10V. Part not recommended for use above this value.
- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.



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Typical Characteristics

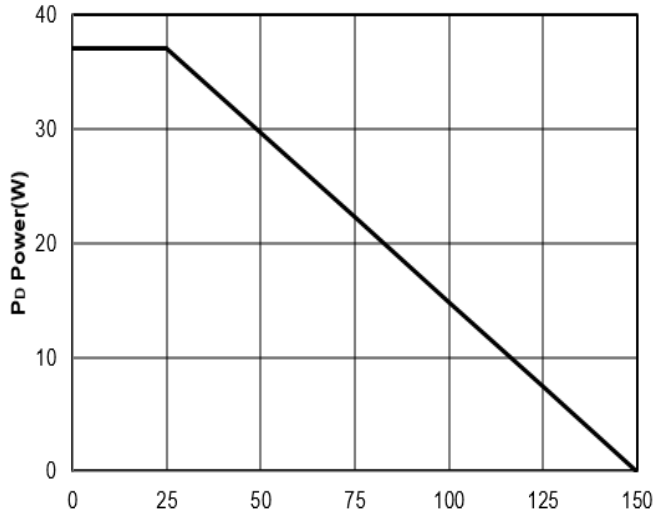


Figure1: Tj Junction Temperature (°C)

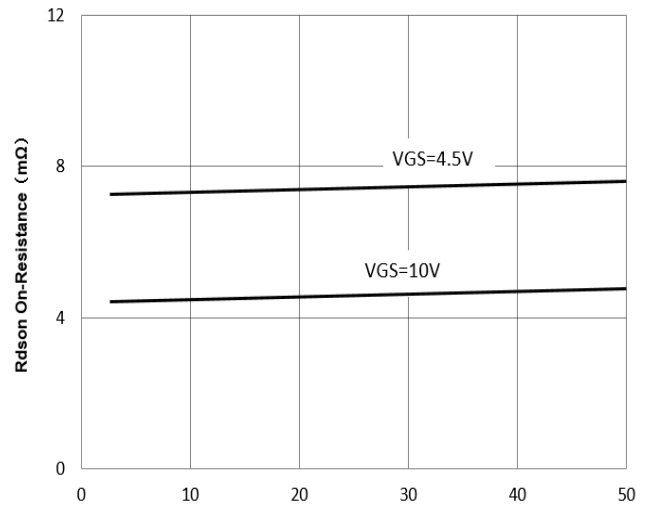


Figure2: Id Drain Current (A)

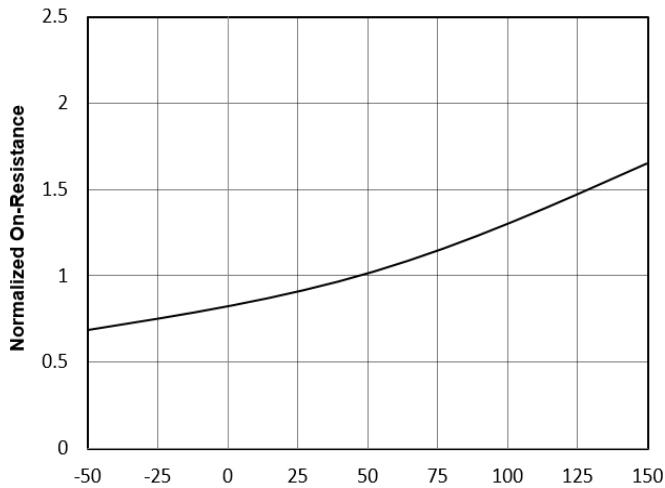


Figure3: Tj Junction Temperature (°C)

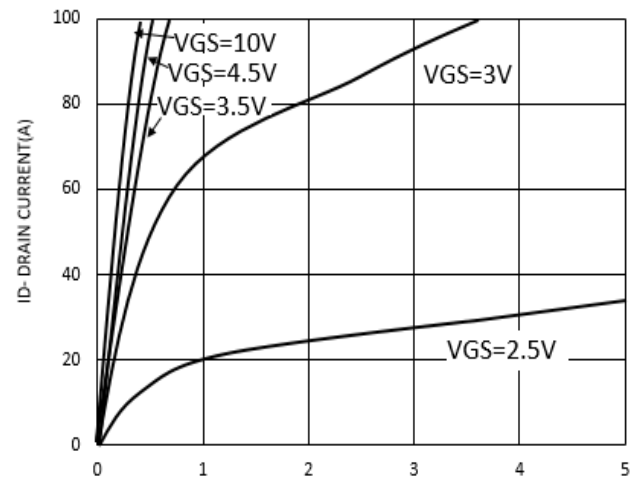


Figure4: Vds Drain-Source Voltage (V)

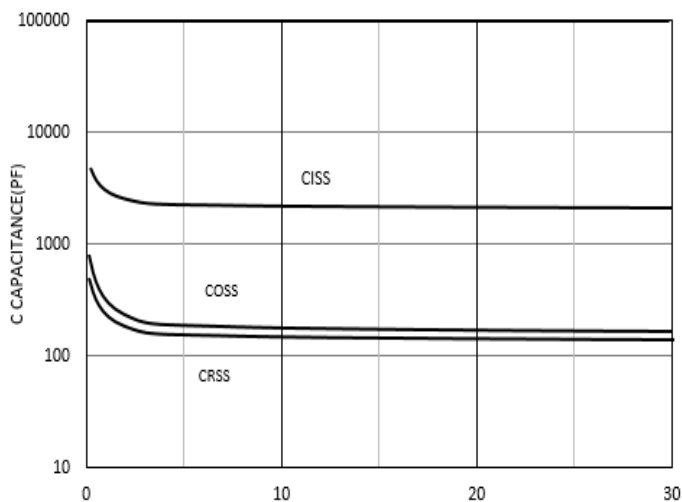


Figure5: Vds Drain-Source Voltage (V)

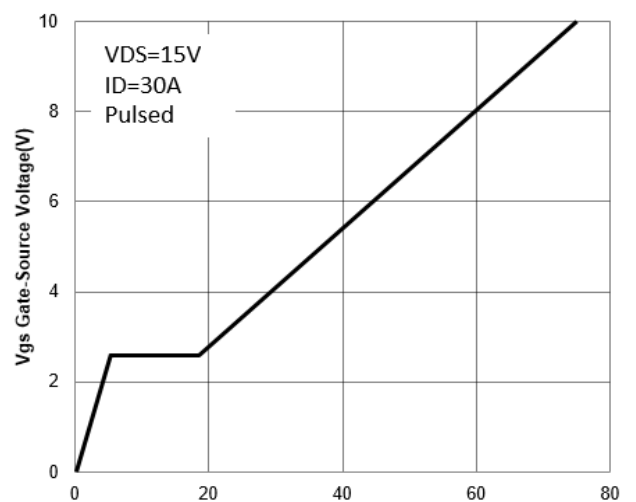


Figure6: Qg Gate Charge (nC)



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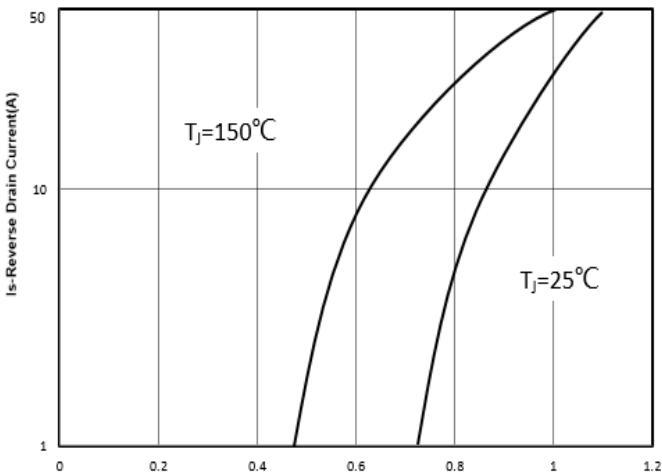


Figure7: Vsd Source-Drain Voltage (V)

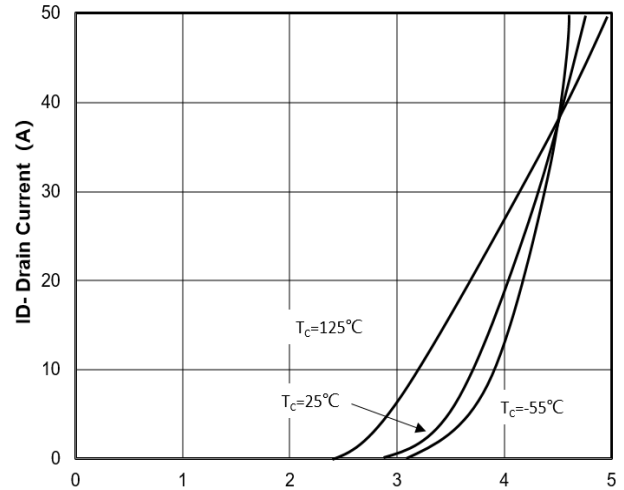


Figure8: Vgs Gate-Source Voltage (V)

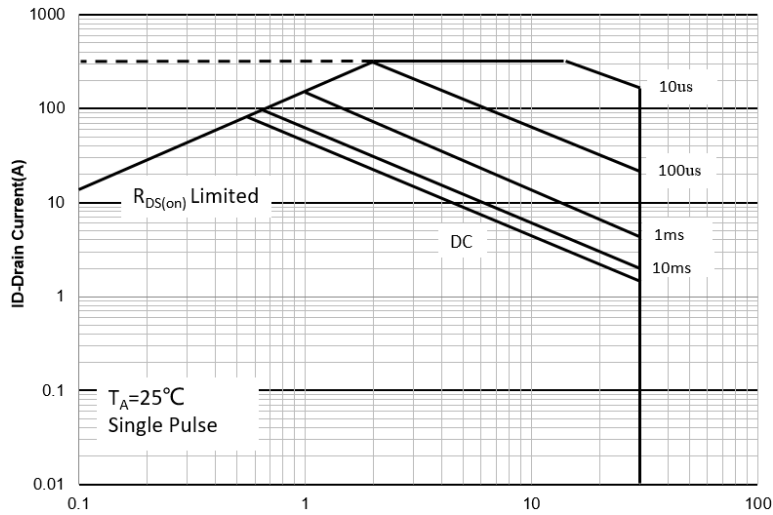


Figure9: VDS Drain -Source Voltage (V)

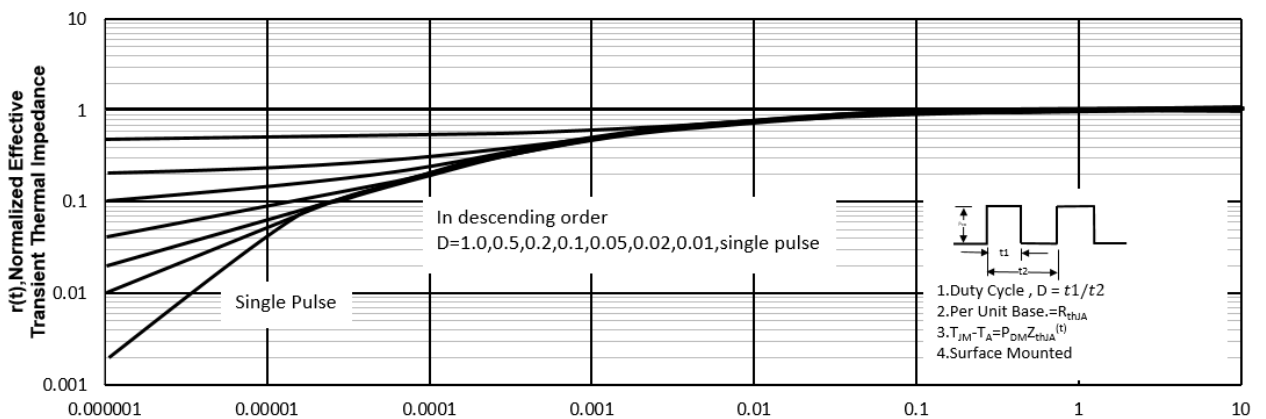
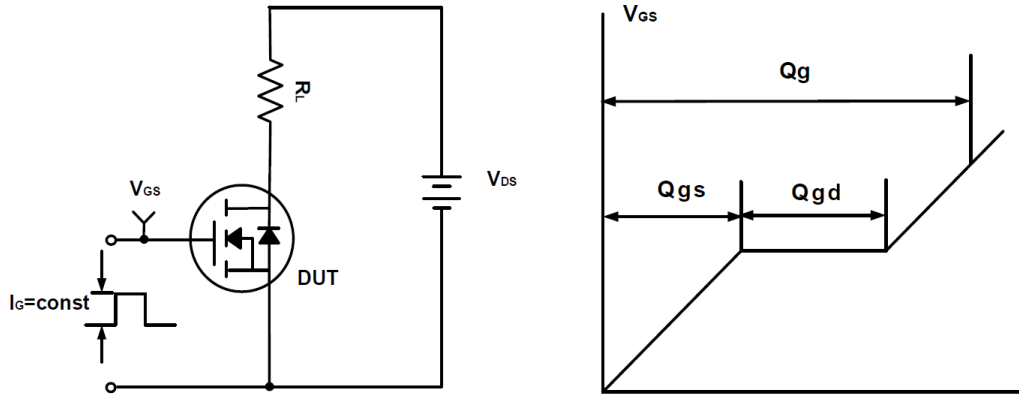
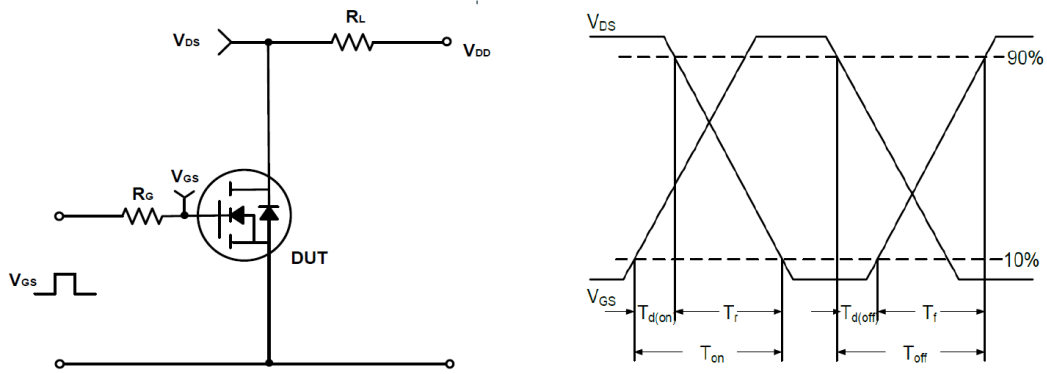
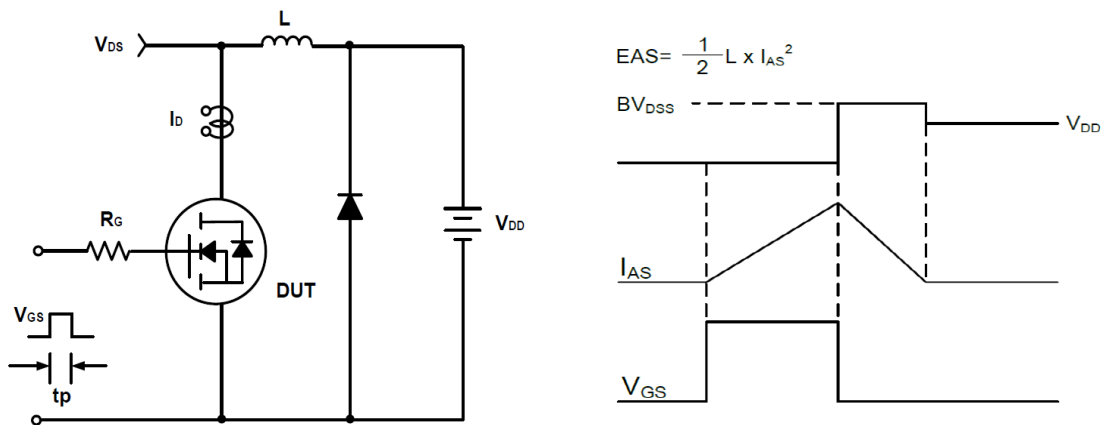
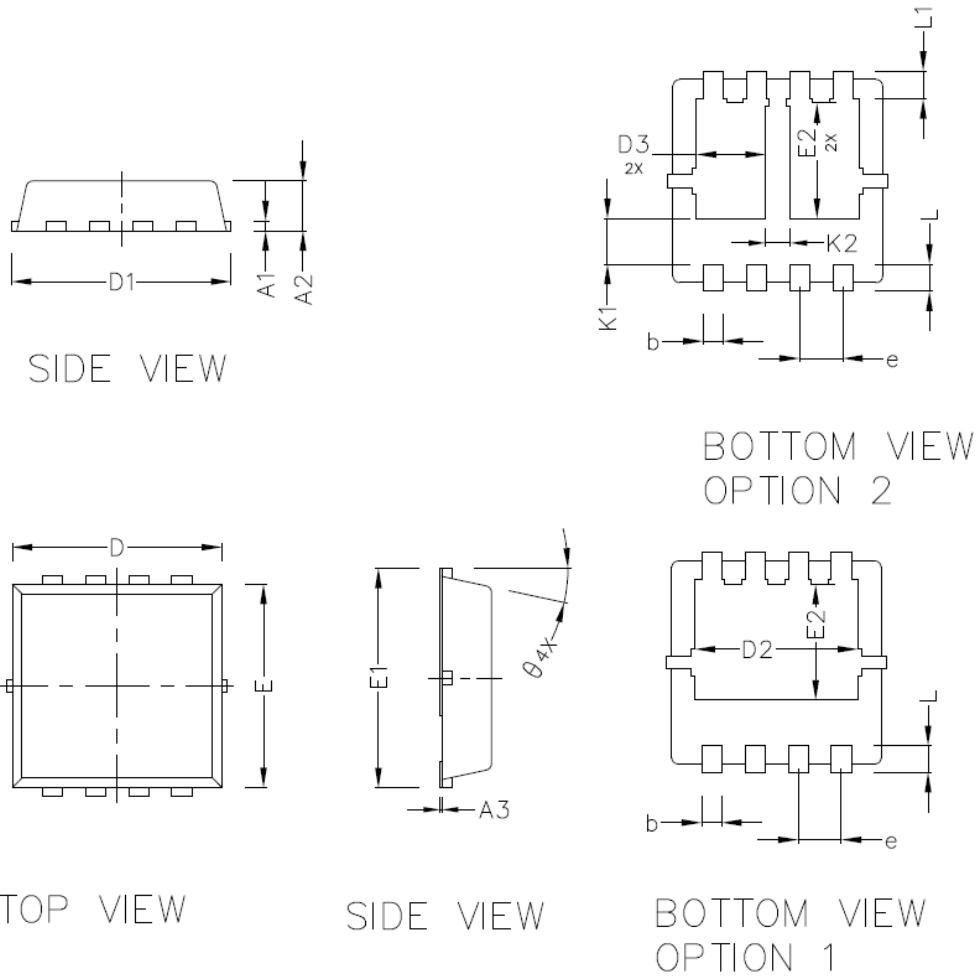


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

Figure A Gate Charge Test Circuit & Waveforms

Figure B Switching Test Circuit & Waveforms

Figure C Unclamped Inductive Switching Circuit & Waveforms

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PDFN3333 Package Outline Dimensions (Units: mm)


COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.152 BSC		
A2	0.650	0.750	0.850
A3	0.005	—	0.020
b	0.250	0.300	0.350
D	3.050	3.150	3.250
D1	3.200	3.300	3.400
D2	2.350	2.450	2.550
D3	0.935	1.035	1.135
E1	3.150	3.300	3.450
E	2.950	3.050	3.150
E2	1.635	1.735	1.835
e	0.650 TYPE		
L	0.300	0.400	0.500
θ	12° TYPE		
K1	0.680 REF		
K2	0.380 REF		
L1	0.410 REF		