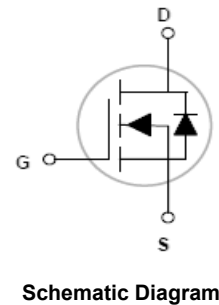
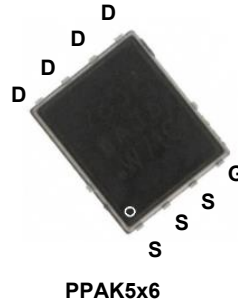


Main Product Characteristics

BV_{DSS}	60V
$R_{DS(ON)}$	6.2m Ω
I_D	60A



Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The GSGP0660 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous(Silicon limited)	I_D	60	A
Drain Current-Continuous($T_C=100^\circ\text{C}$)		42.4	A
Drain Current-Pulsed(Package limited)	I_{DM}	170	A
Single Pulse Avalanche Energy ⁵	E_{AS}	320	mJ
Maximum Power Dissipation	P_D	70	W
Derating Factor		0.56	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	1.78	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

Electrical Characteristics (T_C=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics³						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	5.6	6.2	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.0	3.0	4.0	V
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =20A	35	-	-	S
Dynamic and Switching Characteristics⁴						
Total Gate Charge	Q _g	V _{DS} =30V, I _D =20A, V _{GS} =10V	-	26.9	-	nC
Gate-Source Charge	Q _{gs}		-	9.4	-	
Gate-Drain Charge	Q _{gd}		-	4.6	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =30V, R _G =4.7Ω V _{GS} =10V, I _D =20A	-	8	-	nS
Turn-On Rise Time	t _r		-	2	-	
Turn-Off Delay Time	t _{d(off)}		-	29	-	
Turn-Off Fall Time	t _f		-	4	-	
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, F=1MHz	-	1700	-	pF
Output Capacitance	C _{oss}		-	345	-	
Reverse Transfer Capacitance	C _{rss}		-	8	-	
Drain-Source Diode Characteristics						
Diode Forward Current ²	I _S		-	-	60	A
Diode Forward Voltage ³	V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V
Reverse Recovery Time	T _{rr}	T _J =25°C, I _S =I _F , di/dt=100A/μs ³	-	38	-	nS
Reverse Recovery Charge	Q _{rr}		-	48	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design.
5. EAS condition : T_J=25°C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25Ω

Typical Electrical and Thermal Characteristic Curves

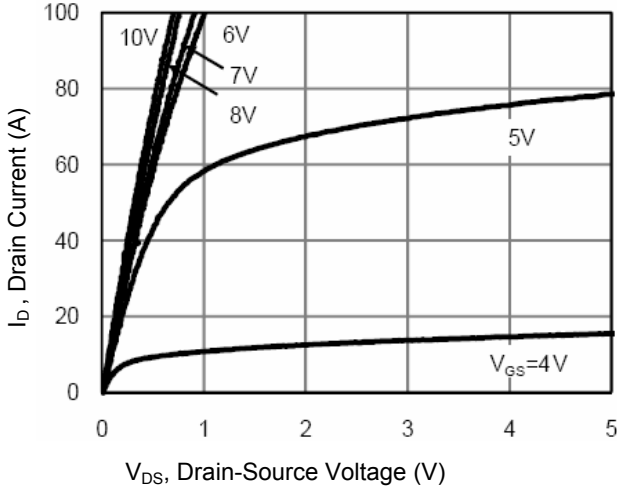


Figure 1. Output Characteristics

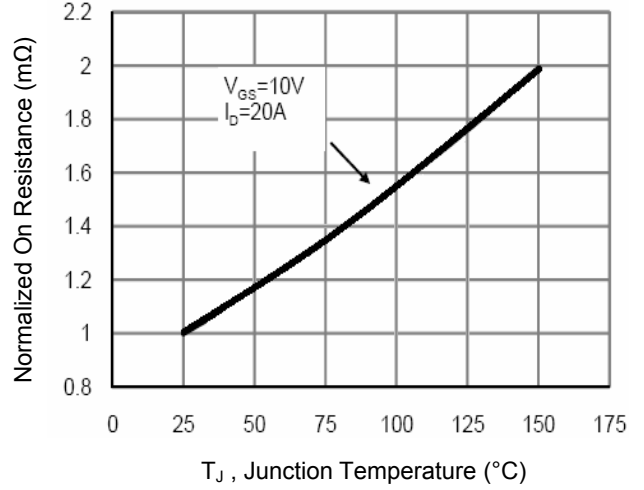


Figure 2. Rdson-Junction Temperature

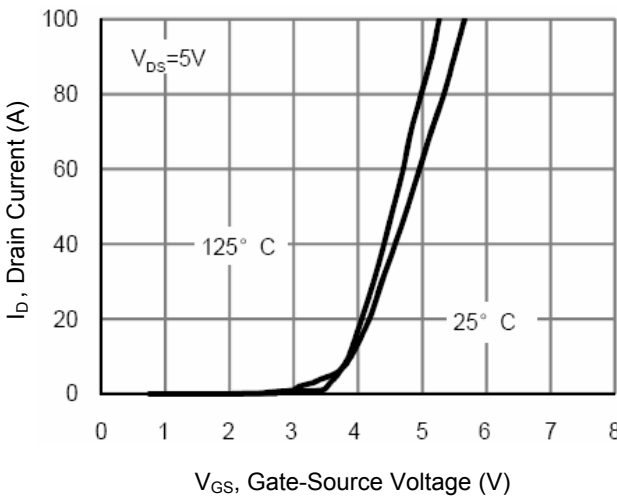


Figure 3. Transfer Characteristics

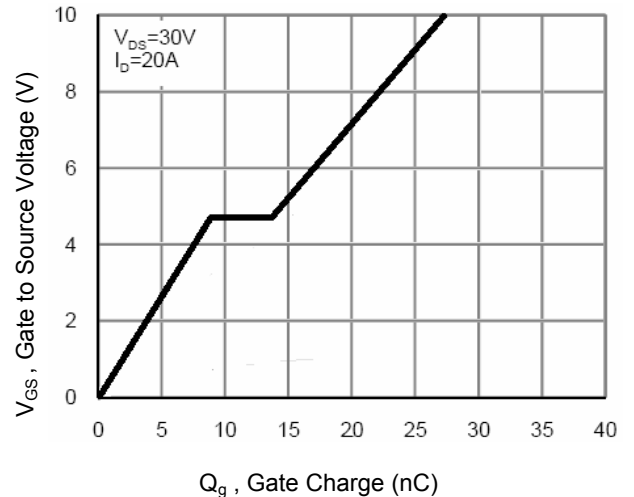


Figure 4. Gate Charge

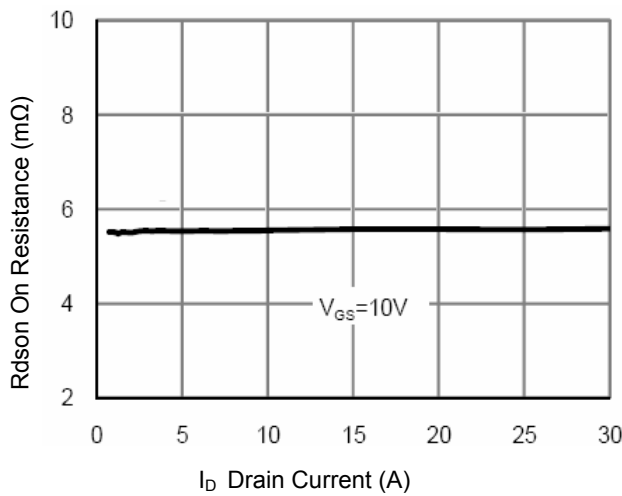


Figure 5. Rdson-Drain Current

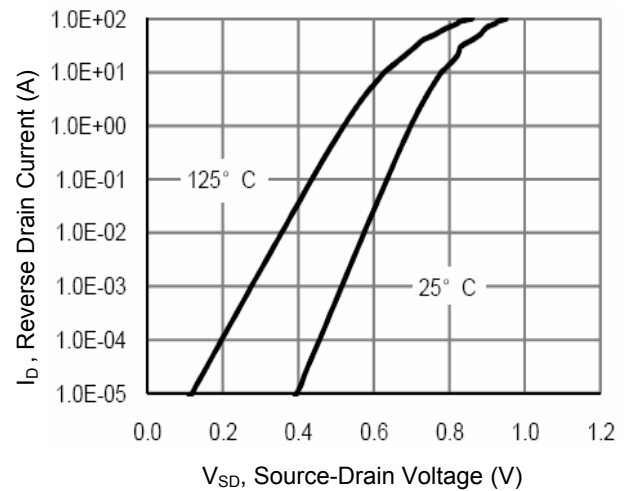


Figure 6. Source-Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

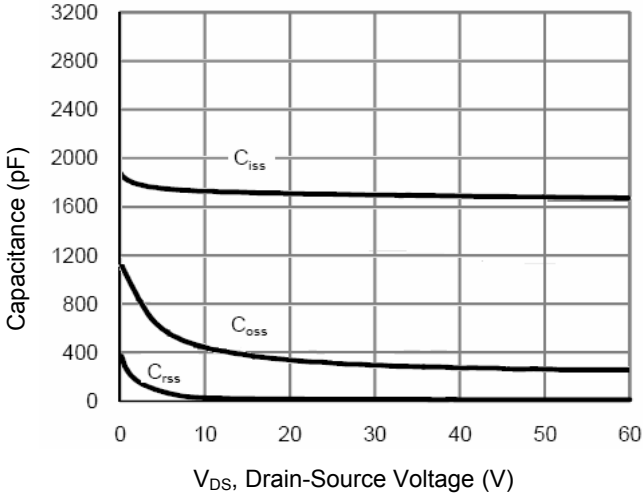


Figure 7. Capacitance vs. V_{DS}

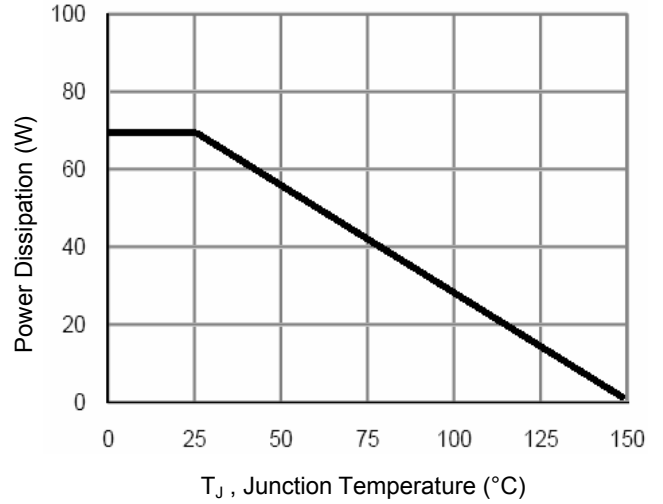


Figure 8. Power De-Rating

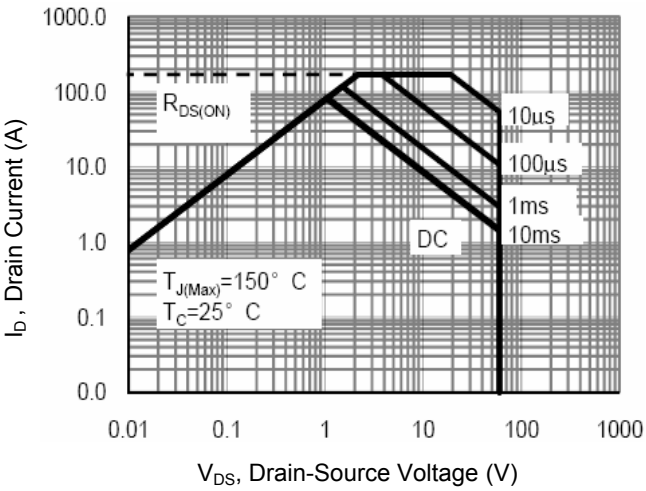


Figure 9. Safe Operation Area

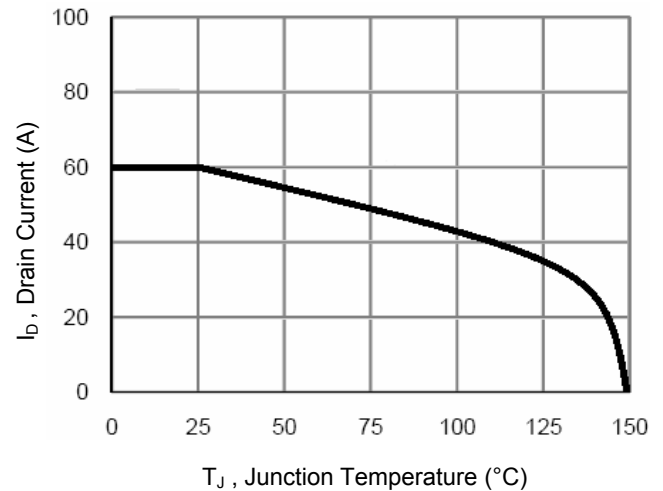


Figure 10. Current De-Rating

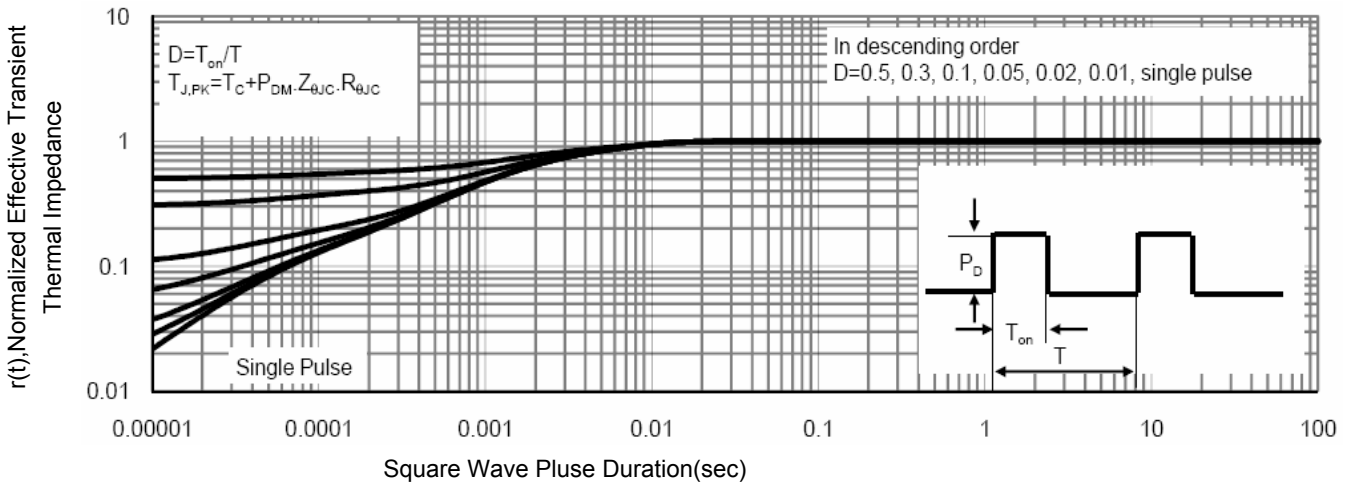


Figure 11. Normalized Maximum Transient Thermal Impedance

Typical Electrical and Thermal Characteristic Curves

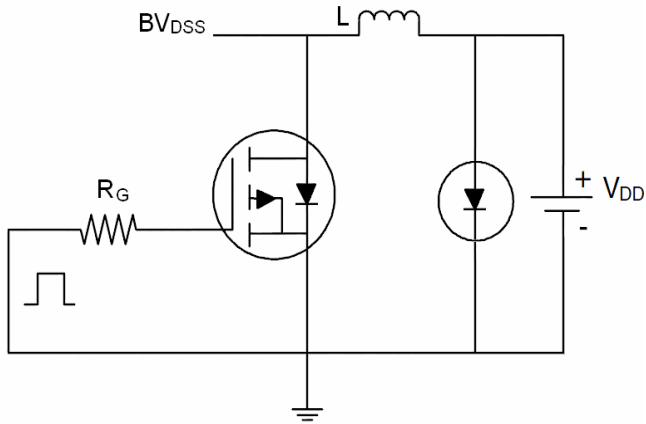


Figure 12. E_{AS} Test Circuit and waveforms

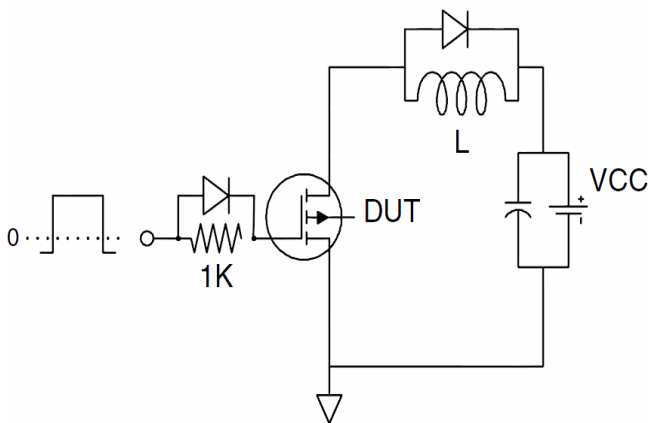
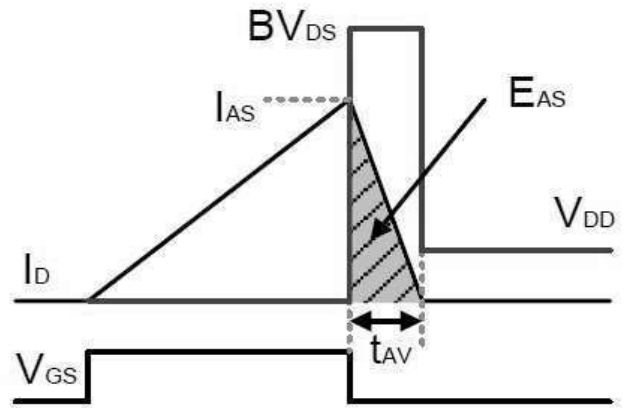


Figure 13. Gate Charge Test Circuit and waveforms

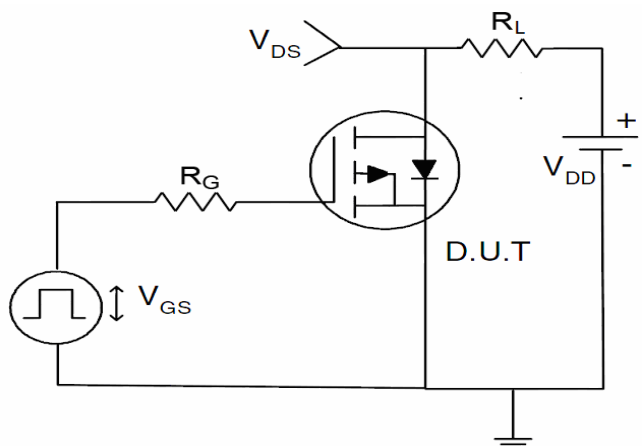
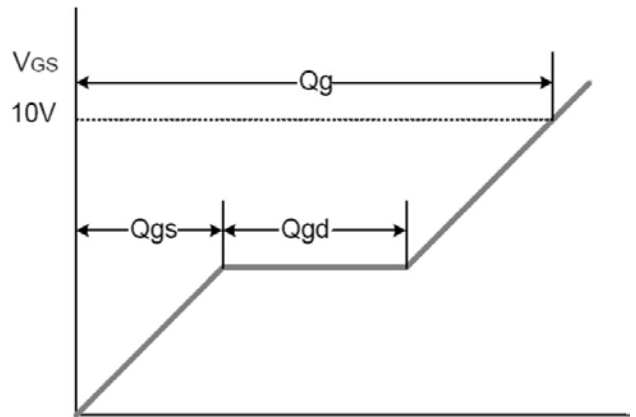
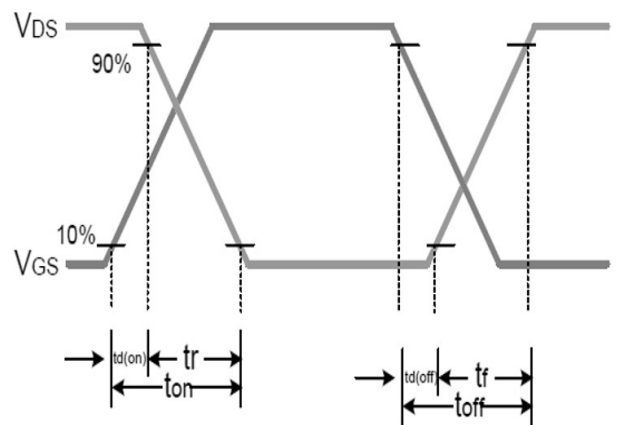
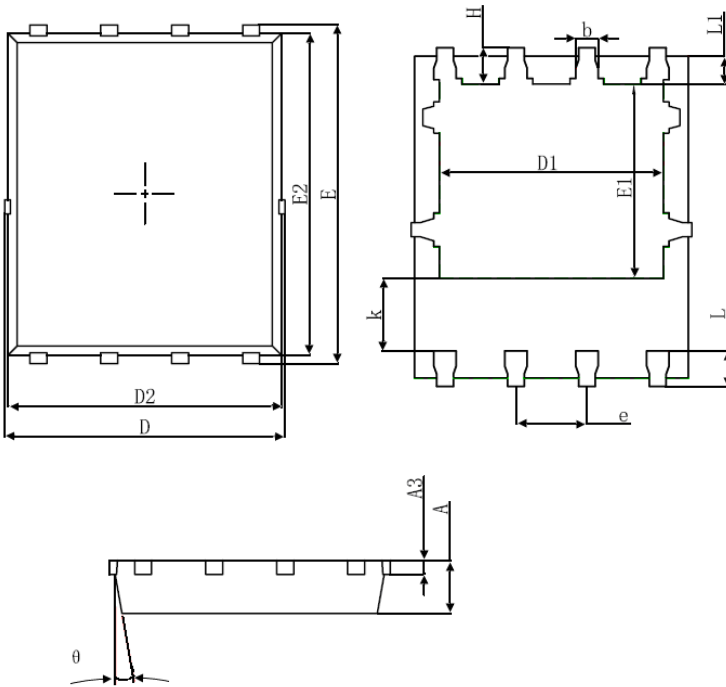


Figure 14. Switch Time Test Circuit and waveforms



Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	8°	12°	8°	12°