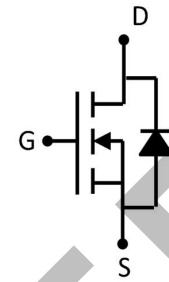


APG060N12

N-Channel Enhancement Mosfet

Features

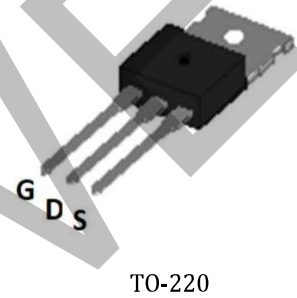
- 120V,100A
 $R_{DS(on)} < 6.0m\ \Omega @ V_{GS}=10V$ TYP:5.5m Ω
 $R_{DS(on)} < 8.0m\ \Omega @ V_{GS}=6V$ TYP:6.9m Ω
- Advanced trench cell design
- Low Thermal Resistance



Schematic Diagram

Applications

- Motor drivers
- DC - DC Converter



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
G060N12	APG060N12	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	100	A
Pulsed Drain Current ^(1,2,3)	I_{DM}	240	A
Single Pulsed Avalanche Energy ⁽¹⁾	E_{AS}	800	mJ
Power Dissipation	P_D	147	W
Thermal Resistance from Junction to Case ⁽¹⁾	$R_{\theta JC}$	0.85	$^\circ\text{C/W}$
Thermal Resistance- Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

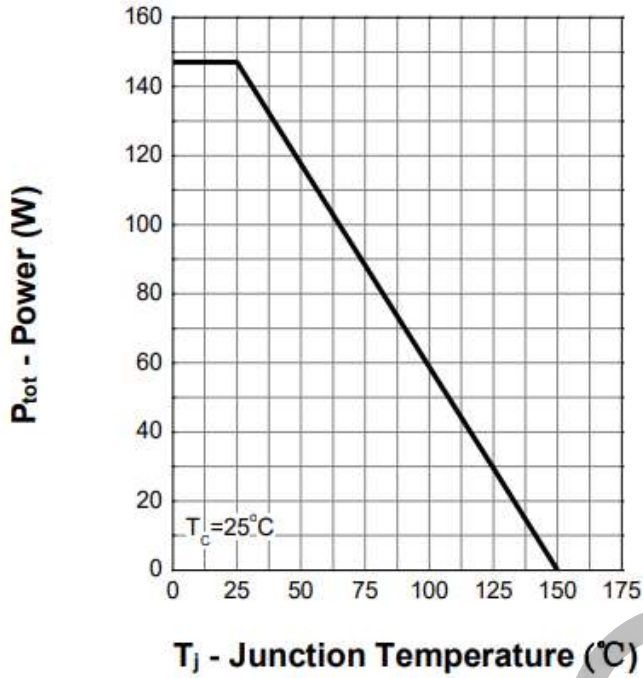
MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	120	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 96V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
Drain-source on-resistance ⁽²⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 50A$	-	5.5	6.0	m Ω
		$V_{GS} = 6V, I_D = 30A$	-	6.9	8.0	m Ω
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 60V, V_{GS} = 0V, f = 1.0MHz$	-	4903	-	pF
Output Capacitance	C_{oss}		-	566	-	
Reverse Transfer Capacitance	C_{rss}		-	47	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 60V, I_D = 50A, R_G = 3.9\Omega$	-	18	-	ns
Turn-on rise time	t_r		-	71	-	
Turn-off delay time	$t_{d(off)}$		-	51	-	
Turn-off fall time	t_f		-	79	-	
Total Gate Charge	Q_g	$V_{DS} = 60V, I_D = 50A, V_{GS} = 10V$	-	81	-	nC
Gate-Source Charge	Q_{gs}		-	28	-	
Gate-Drain Charge	Q_{gd}		-	18	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽²⁾	V_{SD}	$T_J = 25^{\circ}\text{C}, V_{GS} = 0V, I_S = 50A$	-	-	1.3	V
Diode Forward current	I_S	$T_C = 25^{\circ}\text{C}$	-	-	100	A
Body Diode Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}\text{C}, I_F = 50A, di/dt = 100A/\mu s$		100		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$T_J = 25^{\circ}\text{C}, I_F = 50A, di/dt = 100A/\mu s$		307		uc

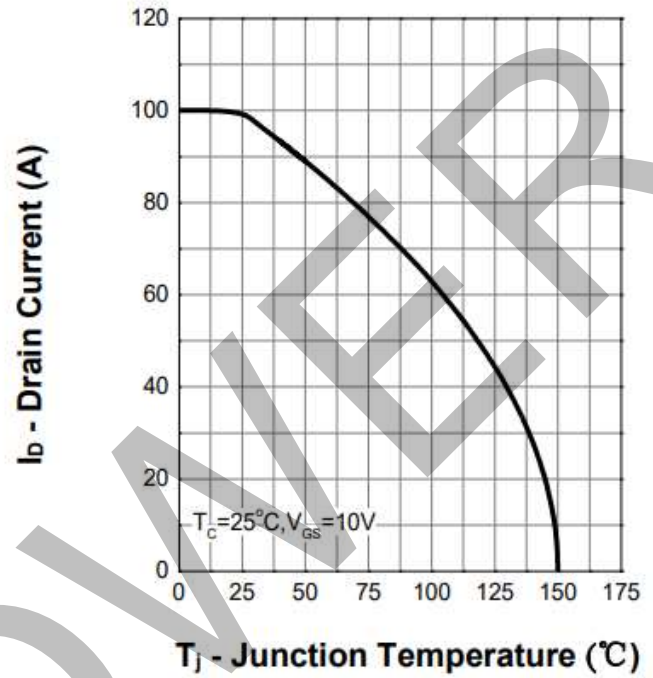
Notes:

1. Surface Mounted on 1 in² pad area, $t \leq 10$ sec
2. Pulse width $\leq 300 \mu s$, duty cycle $\leq 2 \%$
3. Limited by bonding wire

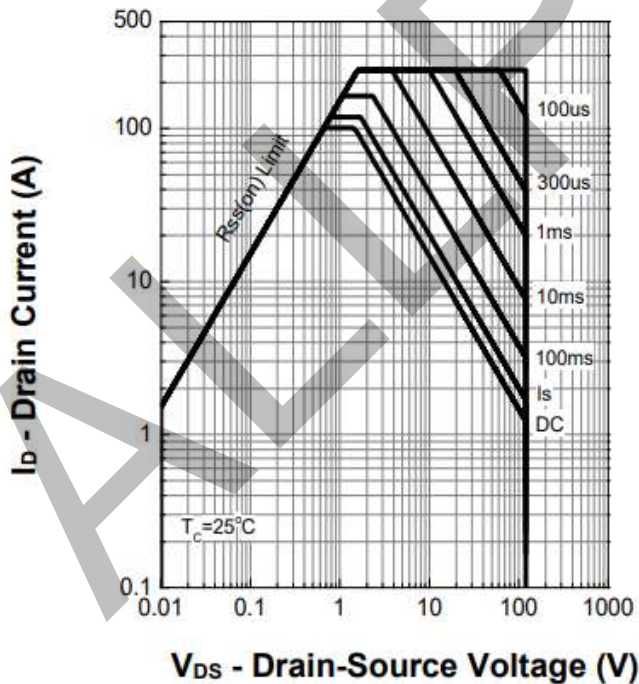
Power Capability



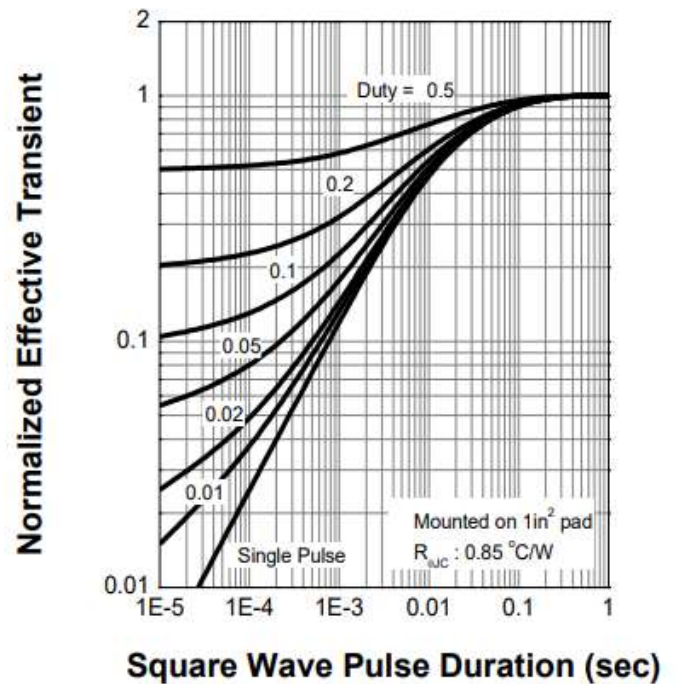
Current Capability



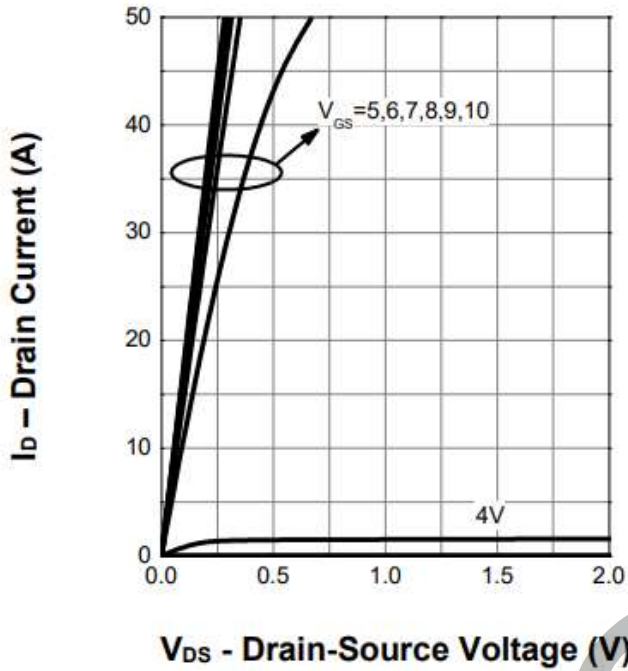
Safe Operating Area



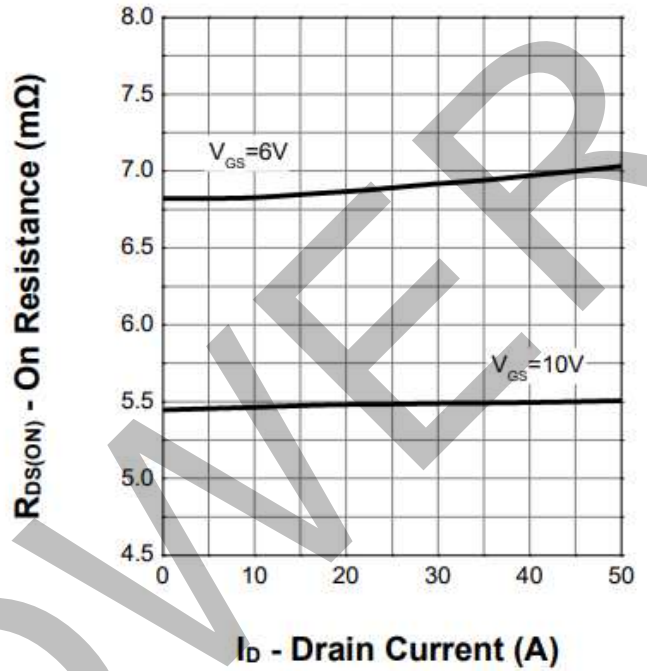
Thermal Transient Impedance



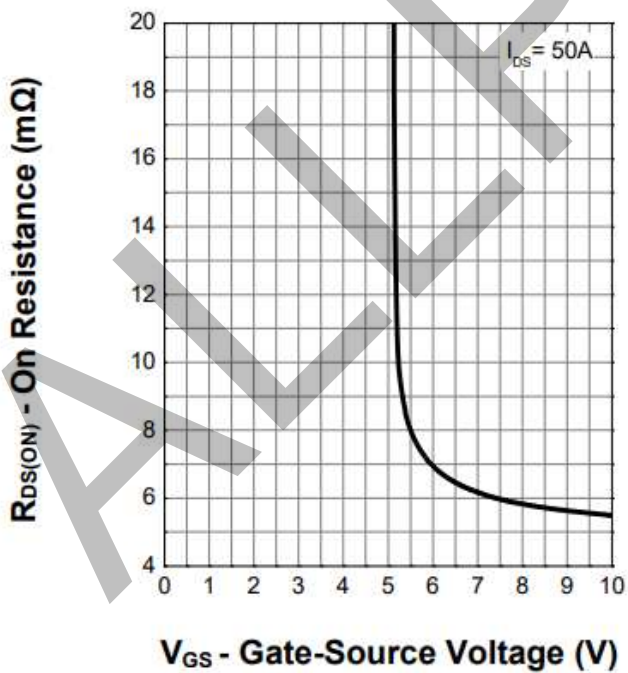
Output Characteristics



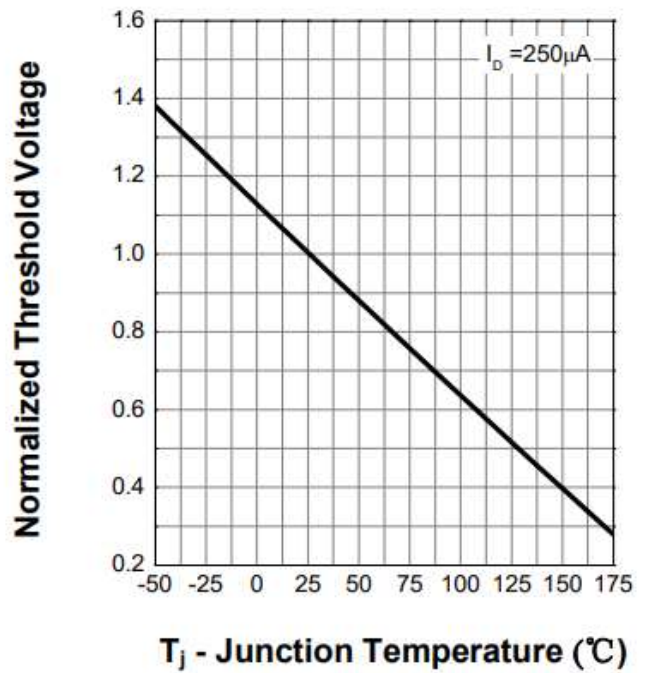
Drain-Source On Resistance



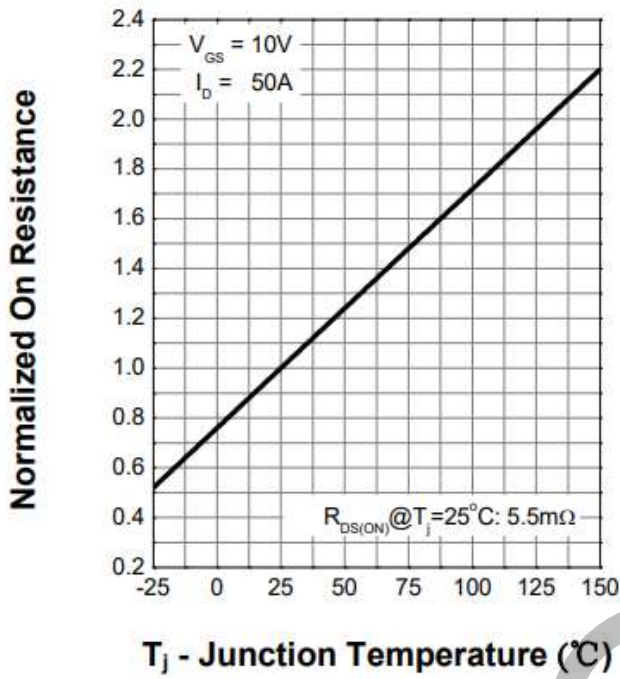
Transfer Characteristics



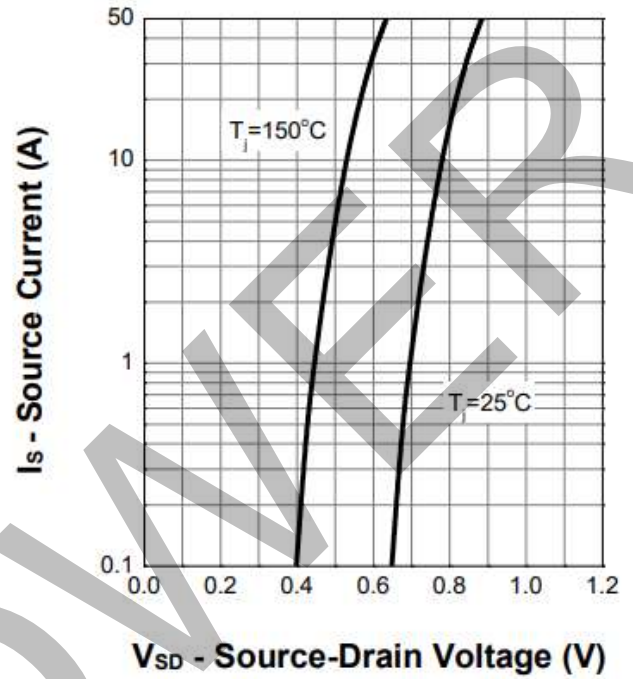
Gate Threshold Voltage



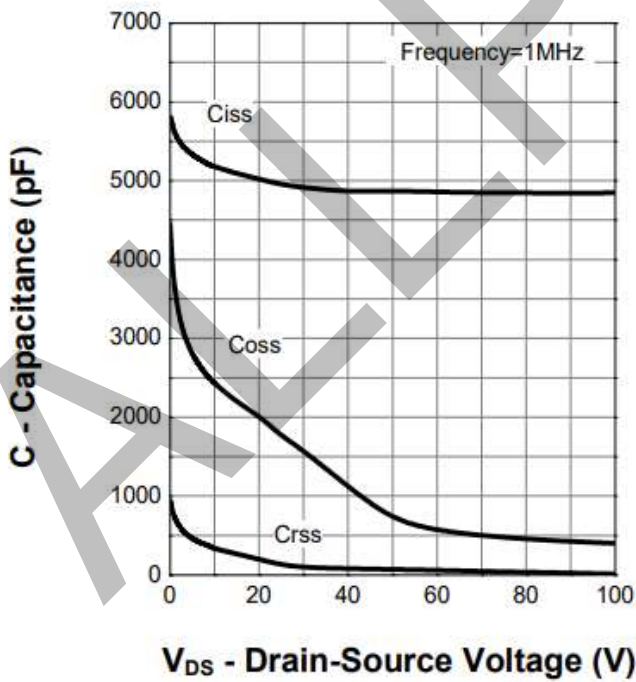
Drain-Source On Resistance



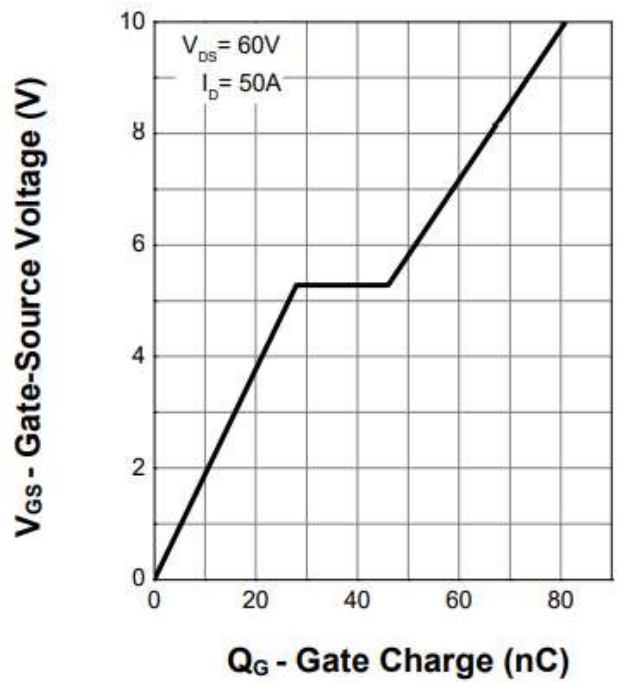
Body Diode Characteristics



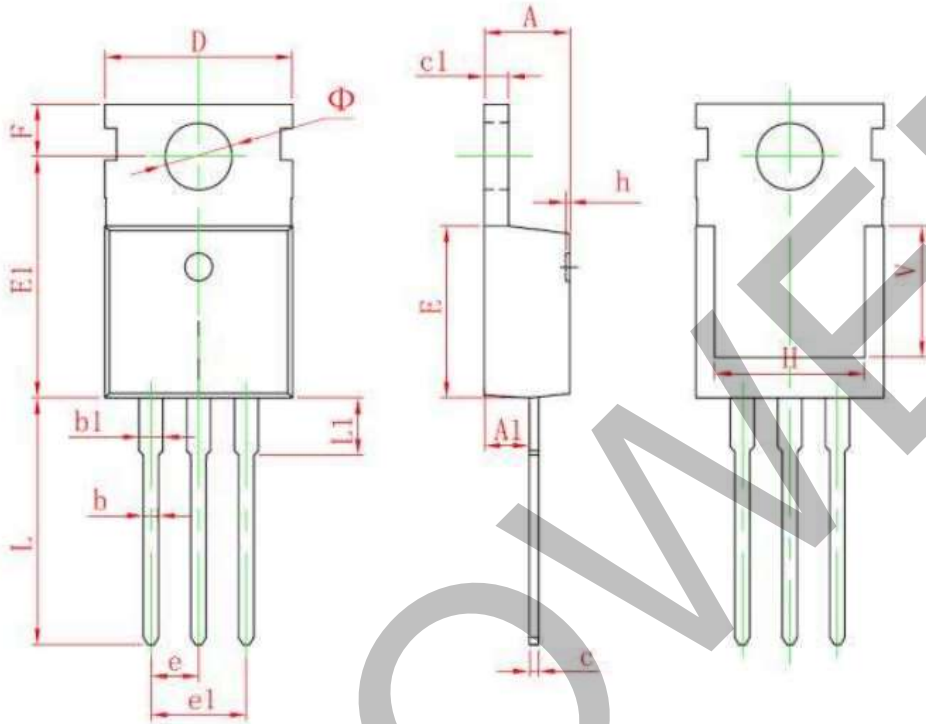
Capacitance



Gate Charge



TO220C Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.514
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
Φ	3.400	3.800	0.134	0.150