

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
1200V	48mΩ@20V	35A

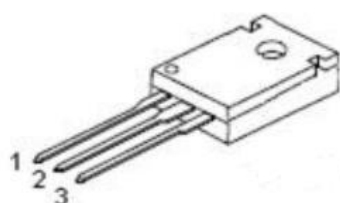
Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Easy to Parallel
- Simple to Drive
- RoHS Compliant

Applications

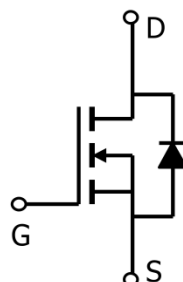
- Power Factor Correction Modules
- Switch Mode Power Supplies
- Photovoltaic Inverter
- UPS Power Supply
- Motor Drive
- High Voltage DC/DC Converter
- Switching Mode Power Supply

Package

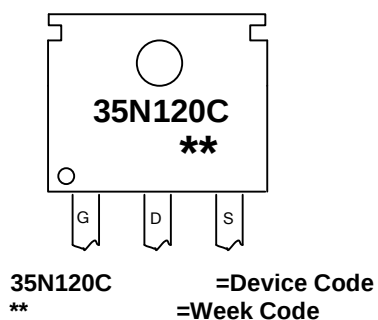


TO-247-3L(1:G 2:D 3:S)

Circuit diagram



Marking



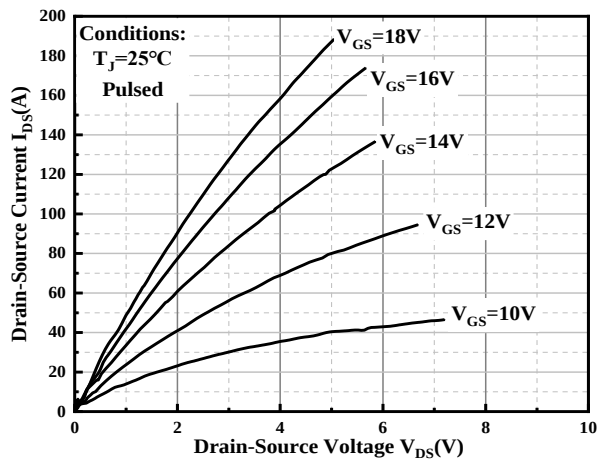
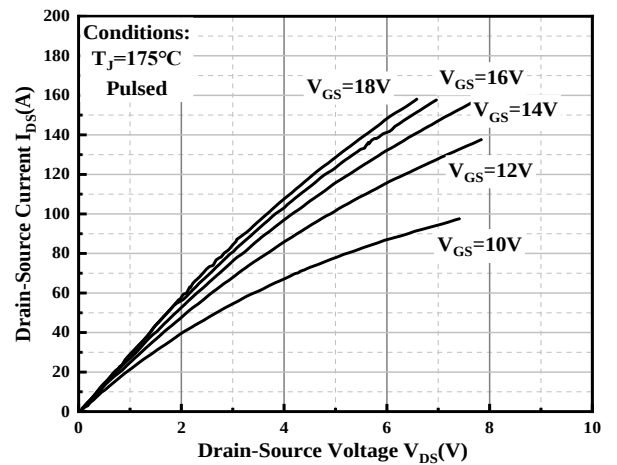
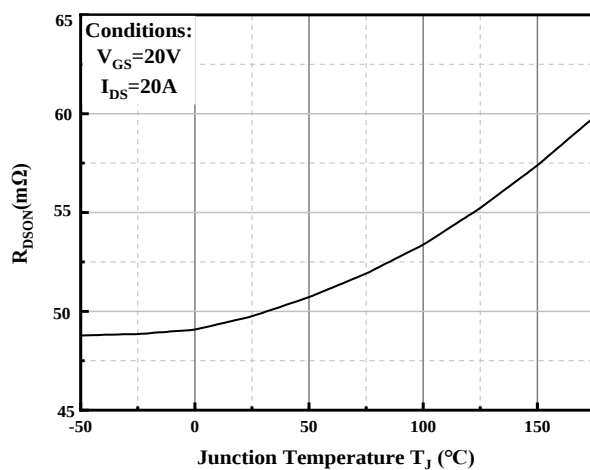
**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	1200	V
Gate-Source Voltage	$V_{GS\text{MAX}}$	-10/+22	V
Recommend Gate-Source Voltage	V_{GSop}	-5/+18	V
Continuous Drain Current(Tc=25°C)	I_D	65	A
Continuous Drain Current(Tc=100°C)	I_D	35	A
Pulsed Drain Current	I_{DM}	130	A
Total Power Dissipation(Tc=25°C)	P_D	327	W
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.4	°C/W
Storage Temperature Range	T_{STG}	-55 to 175	°C
Operating Junction Temperature Range	T_J	-55 to 175	°C

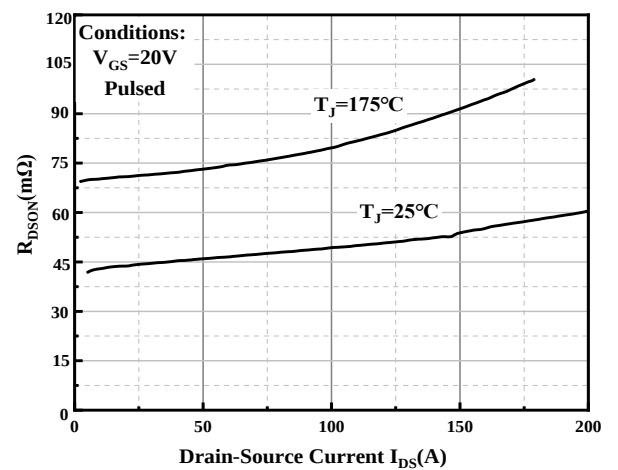
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=100uA	1200	---	---	V
Drain-Source Leakage Current	IDSS	VDS=1200V, VGS=0V, TJ=25℃	---	5	100	uA
Gate-Source Leakage Current	IGSS	VGS=-10/+22 , VDS=0V, TJ=25℃	---	---	100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =10mA, TJ=25℃	2.0	3.1	4.0	V
		VGS=VDS , ID =10mA, TJ=175℃	---	2.1	---	
Static Drain-Source On-Resistance	RDS(ON)	VGS=20V , ID=20A, TJ=25℃	---	48	60	mΩ
		VGS=20V , ID=20A, TJ=175℃	---	65	79	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=800V , VGS=0V , f=1MHz	---	2560	---	pF
Output Capacitance	Coss		---	121	---	
Reverse Transfer Capacitance	Crss		---	8	---	
Switching Characteristics						
Total Gate Charge (4.5V)	Qg	VDS=800V , VGS= -5/+18V , ID=20A	---	124	---	nC
Gate-Source Charge	Qgs		---	25	---	
Gate-Drain Charge	Qgd		---	47	---	
Turn-On Delay Time	Td(on)	VDS=800V , VGS= -5/+18V , ID=20A RG=10Ω	---	10.2	---	ns
Rise Time	Tr		---	28.6	---	
Turn-Off Delay Time	Td(off)		---	42.2	---	
Fall Time	Tf		---	14	---	
Turn-On Energy	Eon		---	721	---	uJ
Turn-Off Energy	Eoff		---	118.6	---	
Total Switching Loss	Etot		---	832.6	---	
Reverse Diode Characteristics						
Diode Forward Voltage	VSD	VGS= -5V , ISD=20A , TJ=25℃	---	4.4	7	V
		VGS= -5V , ISD=20A , TJ=175℃	---	3.8	---	
Reverse Recovery Time	trr	VGS=-5V/+18V, ISD=20A, VR=800V, di/dt=1000A/μs	---	19.4	---	ns
Reverse Recovery Charge	Qrr		---	0.16	---	nC
Peak Reverse Recovery Current	Irrm		---	24.4	---	A
Reverse Recovery Energy	Erec				17.1	

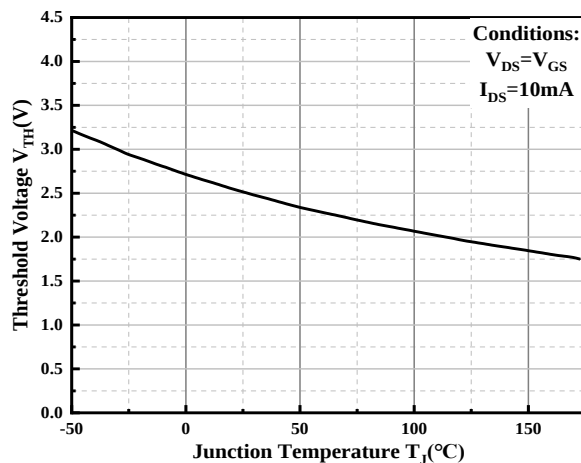
Typical Characteristics


Typical output characteristic(25°C)

Typical output characteristic(175°C)


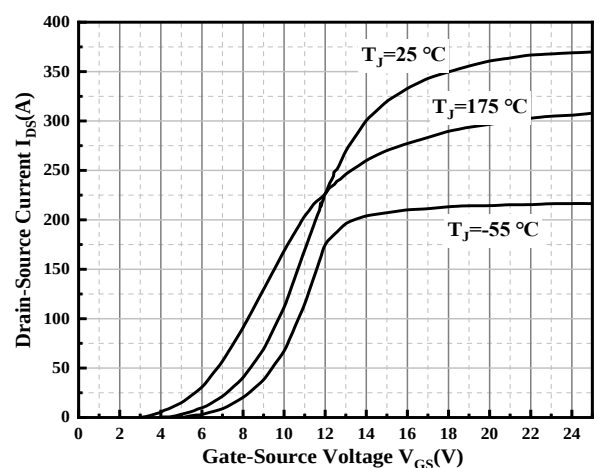
Normalized On-Resistance with Temperature



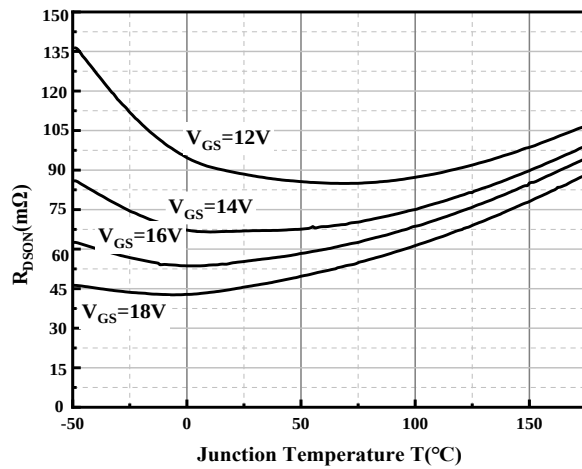
On-Resistance vs. Drain-Source Current



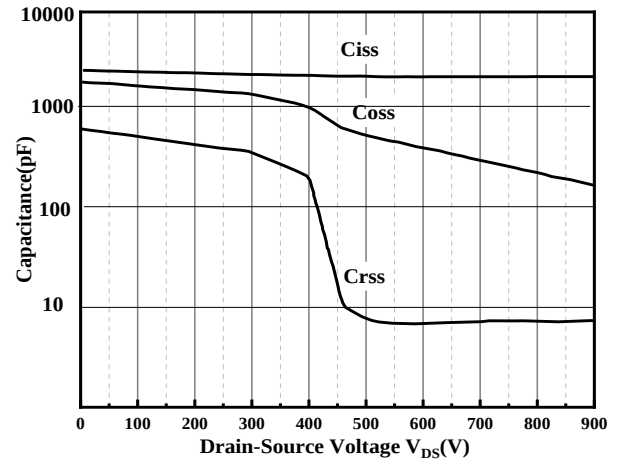
Threshold Voltage Variation with Temperature



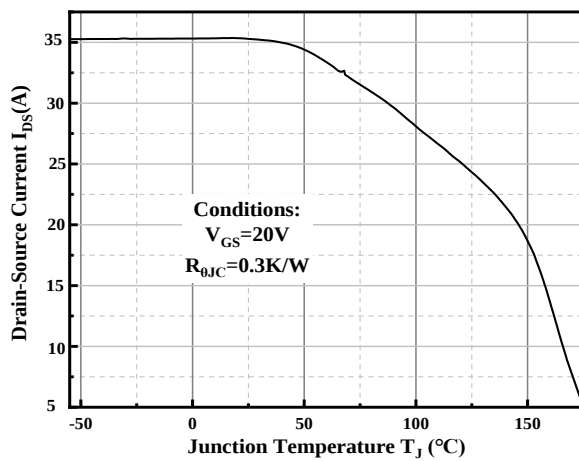
Transfer Characteristics



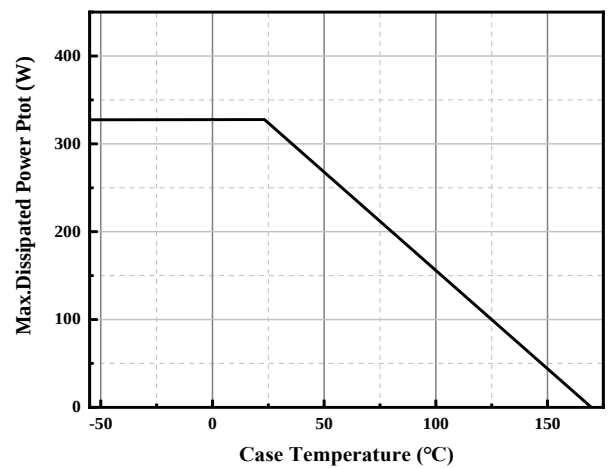
On-Resistance Variation with Temperature



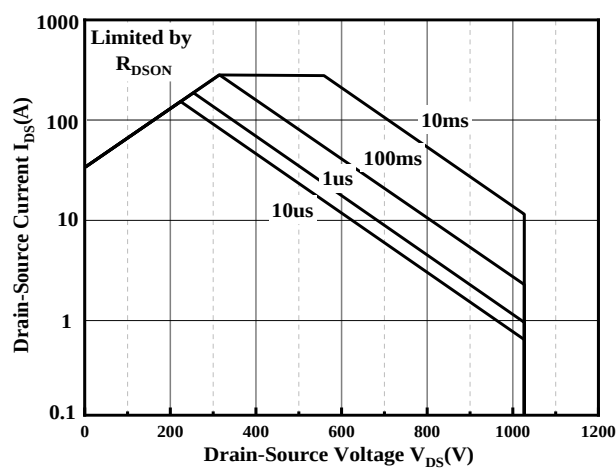
Capacitance vs. Drain-to-Source Voltage



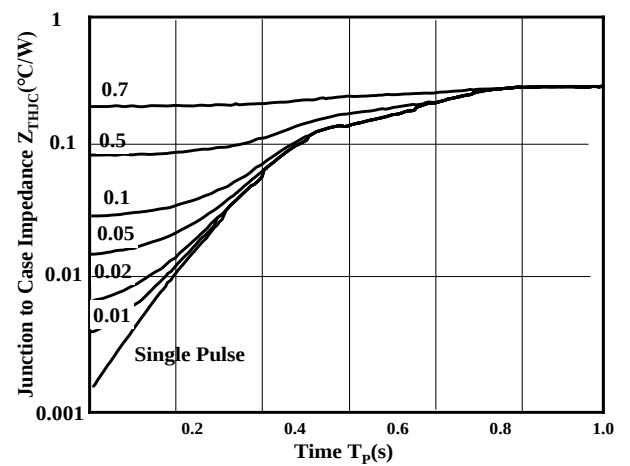
Maximum Ids vs. Case Temperature



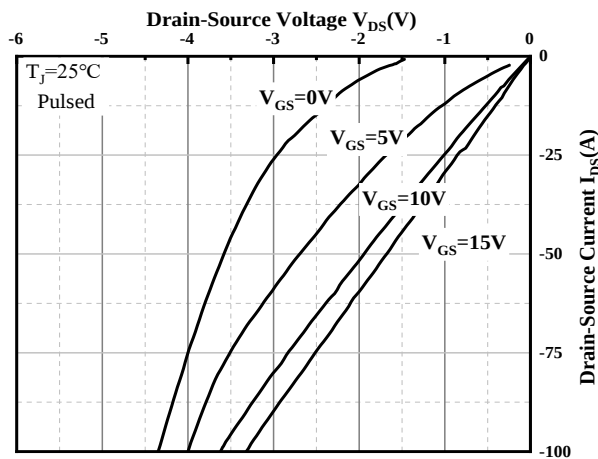
Power dissipation vs. Case temperature



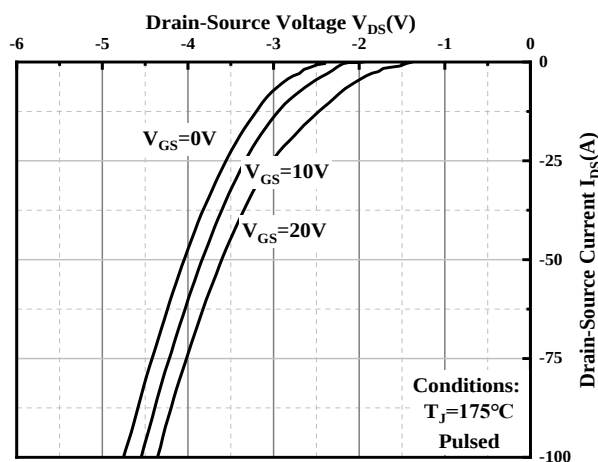
Safe Operation Area



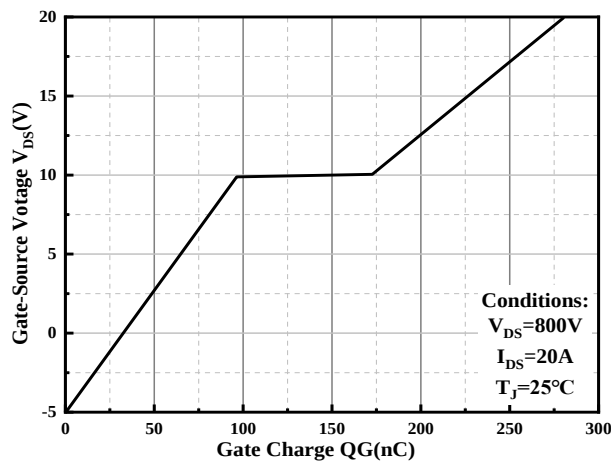
Transient Thermal Impedance



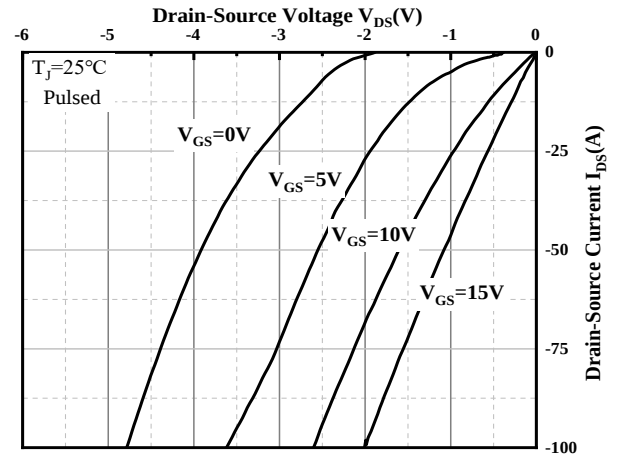
Drain-Source Current vs Drain-Source Voltage(25°C)



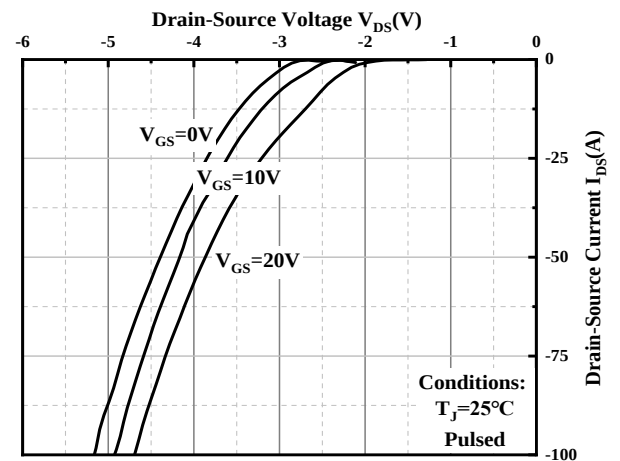
Body Diode Characteristic(25°C)



Gate Charge Characteristics



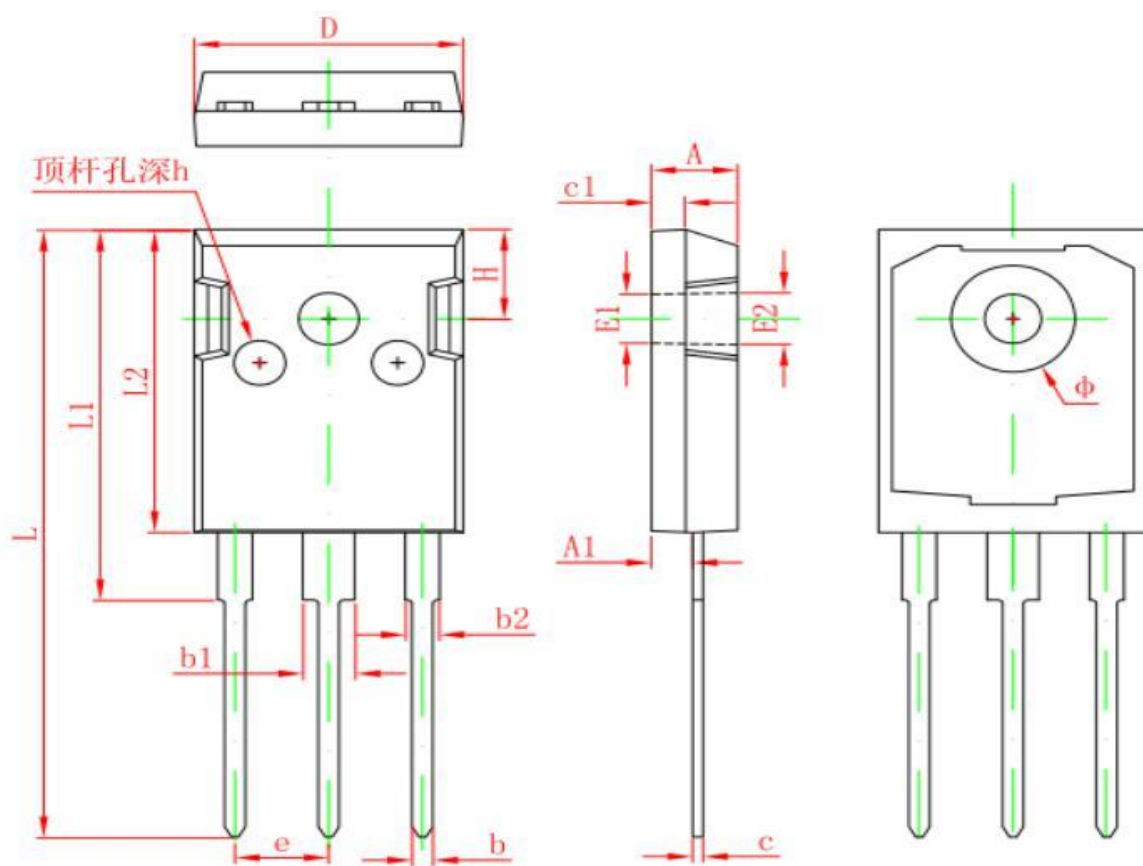
Drain-Source Current vs Drain-Source Voltage(175°C)



Body Diode Characteristic(175°C)



TO-247-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.850	5.150	0.191	0.200
A1	2.200	2.600	0.087	0.102
b	1.000	1.400	0.039	0.055
b1	2.800	3.200	0.110	0.126
b2	1.800	2.200	0.071	0.087
c	0.500	0.700	0.020	0.028
c1	1.900	2.100	0.075	0.083
D	15.450	15.750	0.608	0.620
E1	3.500 REF.		0.138 REF.	
E2	3.600 REF.		0.142 REF.	
L	40.900	41.300	1.610	1.626
L1	24.800	25.100	0.976	0.988
L2	20.300	20.600	0.799	0.811
Φ	7.100	7.300	0.280	0.287
e	5.450 TYP.		0.215 TYP.	
H	5.980 REF.		0.235 REF.	
h	0.000	0.300	0.000	0.012