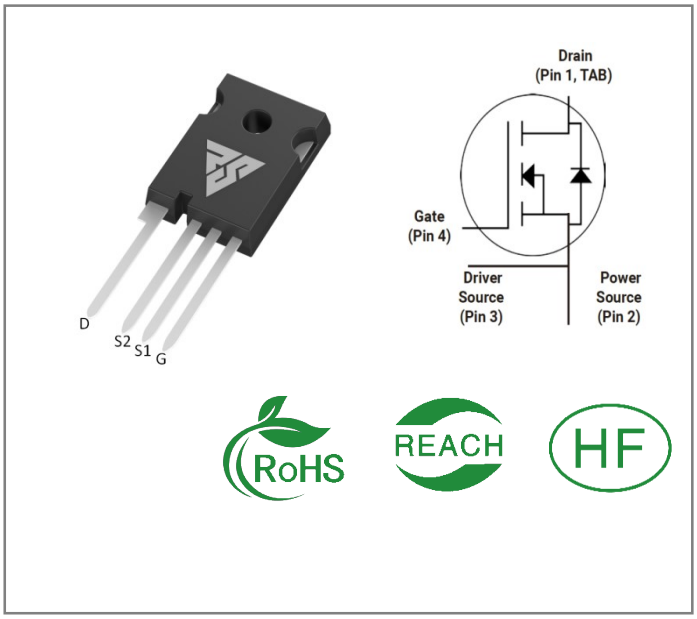
VDS	RDS(on)	ID@25℃
650V	40mΩ	52A



Applications:

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- EV Charging
- Motor Drives

Features:

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness

Benefits:

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSM065040Z	TO-247-4	RSM065040Z	Tube	30 PCS

Maximum Ratings (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
VDSmax	Drain - Source Voltage	650	V	VGS=0V,ID =100μA	
VGSmax	Gate - Source Voltage	-8/+22	V	Absolute maximum values	
VGSop	Gate - Source Voltage	-4/+18	V	Recommended operational values	
ID	Continuous Drain Current	52 37	A	VGS=18V, TC =25℃ VGS=18V, TC =100℃	
ID(pulse)	Pulsed Drain Current	140	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	176	W	TC =25℃, TJ =175℃	
TL	Solder Temperature	260	℃		
TJ, Tstg	Operating Junction and StorageTemperature	-40 to + 175	℃		

Electrical Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions	Note
V(BR)DSS	Drain-Source Breakdown Voltage	650			V	VGS=0V,ID =1mA	
VGS(th)	Gate Threshold Voltage	1.8	2.6	4.3	V	VGS= VDS, IDS=7.5mA, TC =25℃	
IDSS	Zero Gate Voltage Drain Current		1	50	μA	VDS= 650V, VGS=0V	
IGSS	Gate-Source Leakage Current		10	250	nA	VGS=22V, VDS= 0V	
RDS(on)	Drain-Source on-state Resistance		40	52	mΩ	VGS=18V, ID =20A, TC =25℃	
			50			VGS=18V, ID =20A, TC =175℃	
Ciss	Input Capacitance		1500		pF	VGS=0V, VDS=400 V, f=1MHz，VAC=25 mV	
Coss	Output Capacitance		135				
Crss	Reverse Transfer Capacitance		15				
EON	Turn-On Switching Energy		48		μJ	VDS =400V, VGS =-4/18V, ID =20A, RG(ext) = 2.5Ω, L= 100μH	
EOFF	Turn-Off Energy		62				
td(on)	Turn-On Delay Time		13		ns	VDS =400V, VGS =-4/18 V ID = 20A, RG(ext) =2. 5 Ω , RL =20Ω	
tr	Rise Time		14				
td(off)	Turn-Off Delay Time		27				
tf	Fall Time		8				
RG(int)	Internal Gate Resistance		3		Ω	f=1 MHz, VAC=25mV	
Qgs	Gate to Source Charge		28		nC	VDS=400V, VGS=-4/18V ID =20A	
Qgd	Gate to Drain Charge		30				
Qg	Total Gate Charge		82				

Reverse Diode Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
VSD	Diode Forward Voltage	4.2		V	VGS=-4V, ISD = 10A, TJ = 25℃	
		3.8		V	VGS=-4V, ISD= 10 A, TJ= 175℃	
IS	Continuous Diode Forward Current		29	A	VGS=-4V,TC= 25℃	
trr	Reverse Recovery time	23		ns	ISD= 20 A, VR = 400V	
Qrr	Reverse Recovery Charge	80		nC		
Irrm	Peak Reverse Recovery Current	4		A		

Thermal Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
RθJC	Thermal Resistance from Junction to Case	0.85	℃/W		
RθJA	Thermal Resistance From Junction to Ambient	40			

Typical Feature Curve

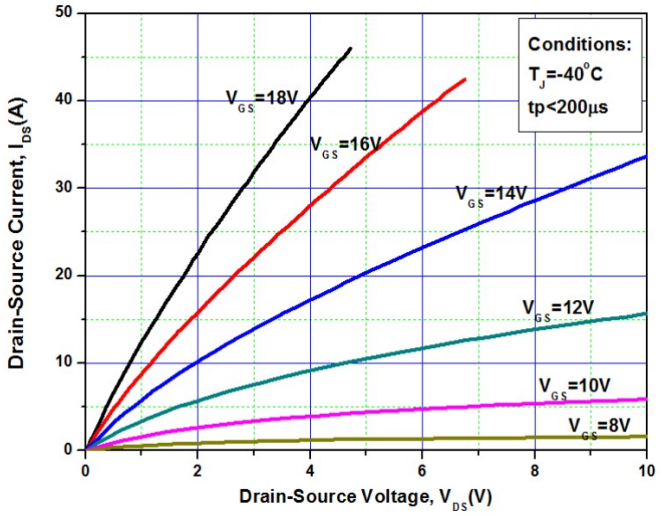


Figure 1. Output Characteristics T_J = -40℃

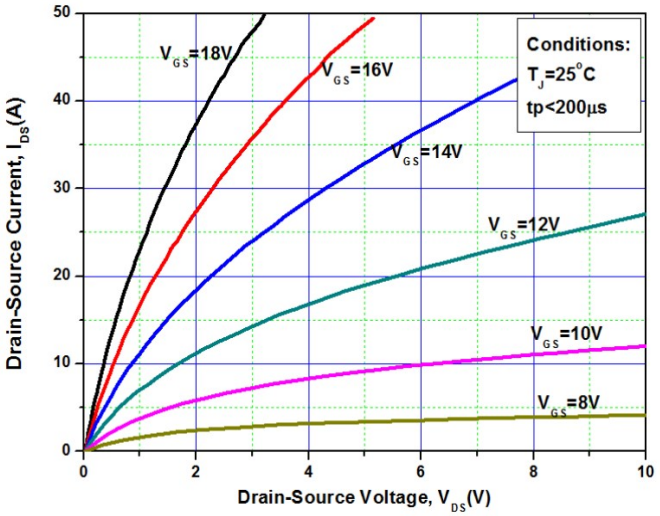


Figure 2. Output Characteristics T_J = 25℃

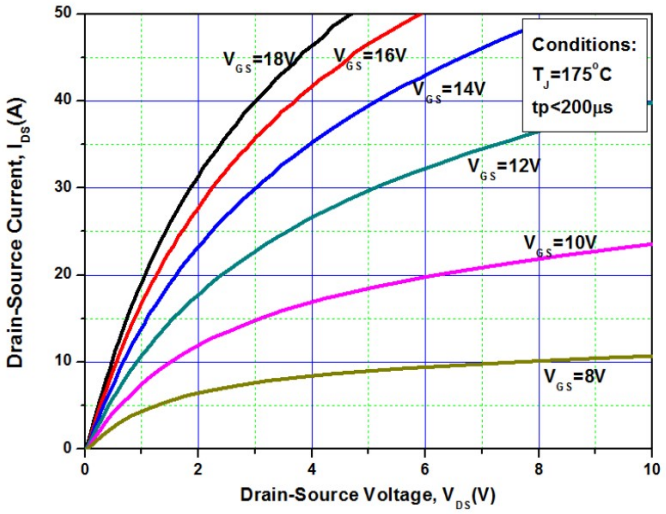


Figure 3. Output Characteristics T_J = 175℃

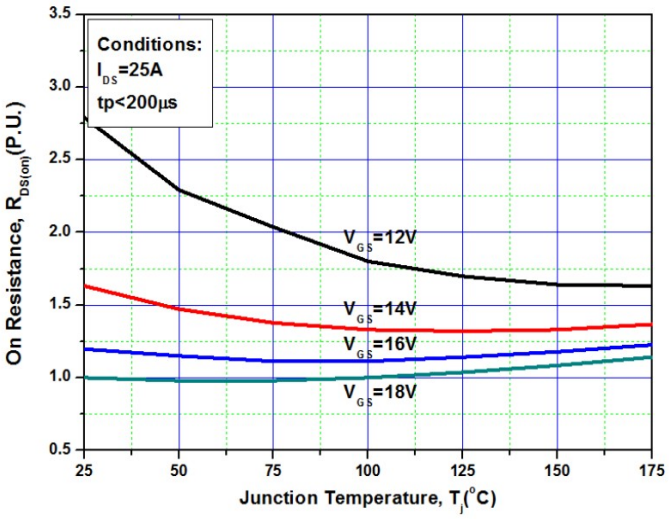


Figure 4. Normalized On-Resistance vs. Temperature

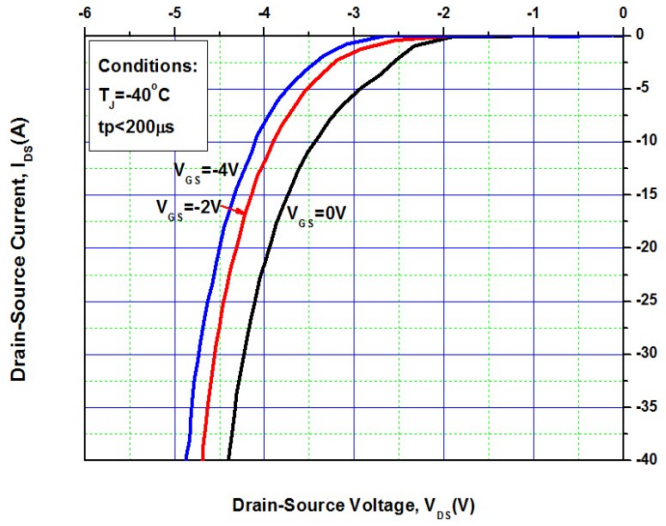


Figure 5. Body Diode Characteristic at -40℃

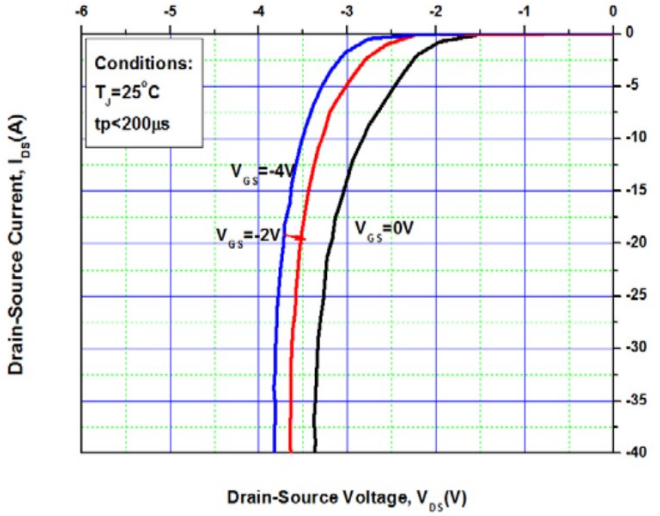


Figure 6. Body Diode Characteristic at 25℃

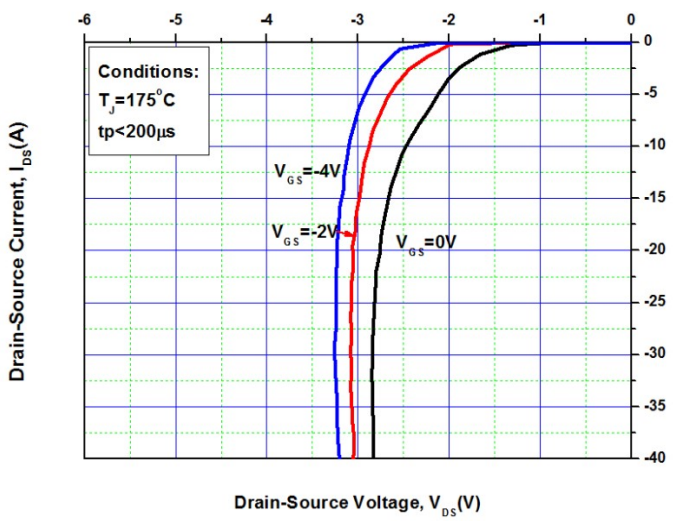


Figure 7. Body Diode Characteristic at 175℃

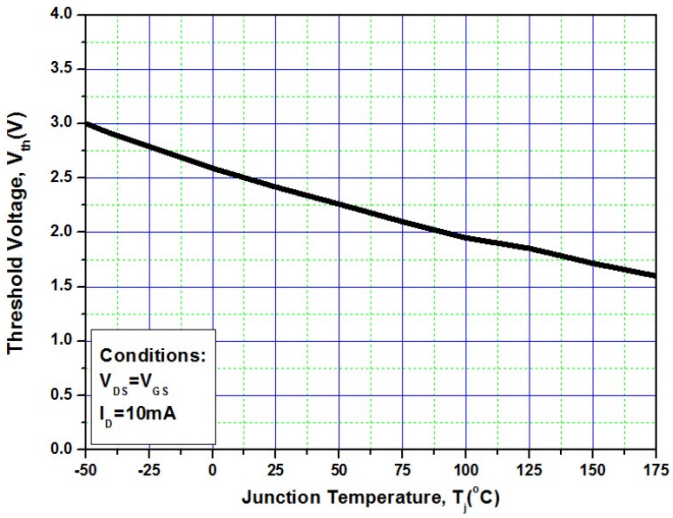


Figure 8. Threshold Voltage vs. Temperature

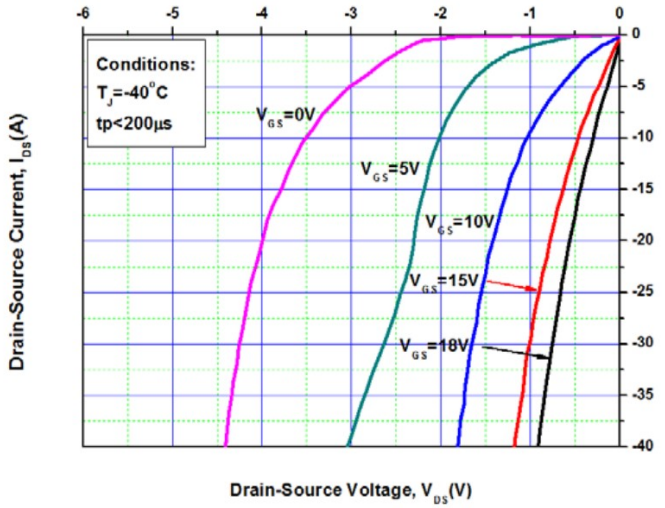


Figure 9. 3rd Quadrant Characteristic at -40℃

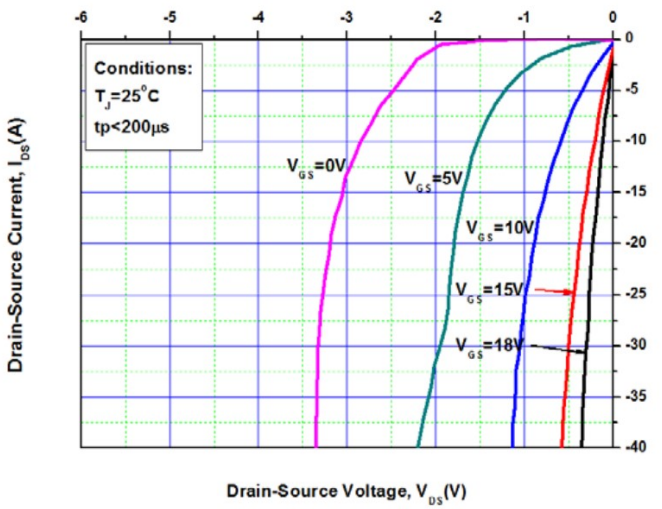


Figure 10. 3rd Quadrant Characteristic at 25℃

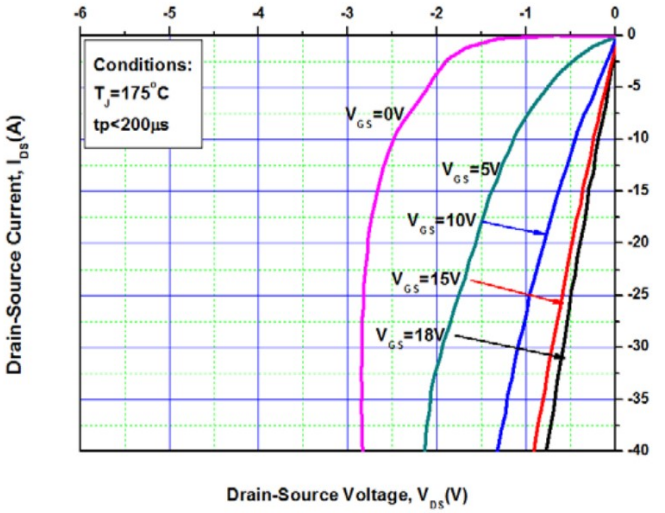


Figure 11. 3rd Quadrant Characteristic at 175℃

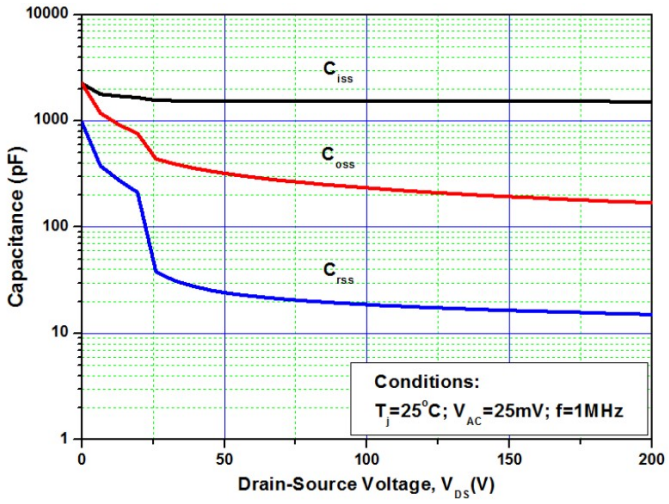


Figure 12. Capacitances vs. Drain-Source Voltage (0 - 200V)

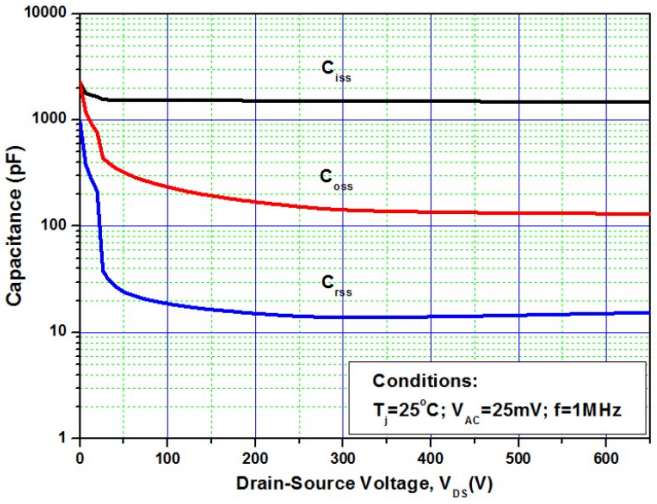
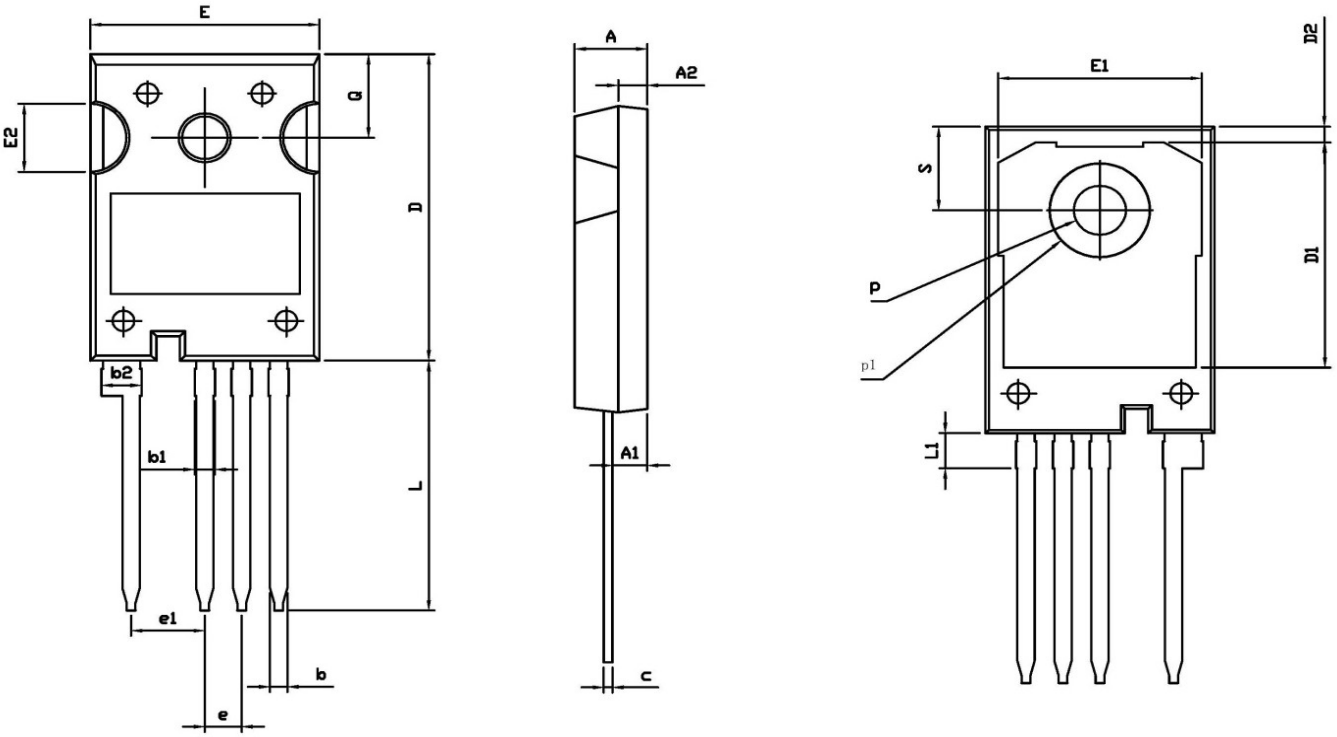
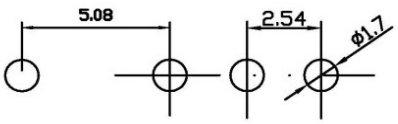


Figure 13. Capacitances vs. Drain-Source Voltage (0 - 650V)

Package outline drawing(TO-247-4 Unit: mm)



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.25	2.40	2.45
A2	1.85	2.00	2.15
b	1.05	1.20	1.35
b1	1.00	1.30	1.60
b2	2.35	2.65	2.95
c	0.50	0.60	0.70
D	22.34	22.54	22.74
D1	16.00	16.50	17.00
D2	0.97	1.17	1.37
e	2.34	2.54	2.74
e1	4.88	5.08	5.28
E	15.60	15.80	16.00
E1	13.50	14.00	14.50
E2	4.80	5.00	5.20
L	18.08	18.38	18.68
L1	2.38	2.58	2.78
p	3.50	3.60	3.70
p1	6.60	6.80	7.00
Q	6.00	6.15	6.30
S	6.00	6.15	6.30

Disclaimers:

Reasunos Semiconductor Technology Co.Ltd (Reasunos) reserves the right to make changes without notice in order to improve reliability,function or design and to discontinue any product or service without notice .Customers should obtain the latest relevant information before orders and should verify that such information in current and complete.All products are sold subject to Reasunos's terms and conditions supplied at the time of orderacknowledgement.

Reasunos Semiconductor Technology Co.Ltd warrants performance of its hardware products to the speciffications at the time of sale.Testing,reliability and quality control are used to the extene Reasunos deems necessary to support this warrantee. Except where agreed upon by contr- actual agreement,testing of all parameters of each product is not necessarily performed.

Reasunos Semiconductor Technology Co.Ltd does not assume any liability arising from the use of any product or circuit designs described herein.Customers are responsible for their products and applications using Reasunos's components.To minimize risk,customers must provide adequate design and operating safeguards.

Reasunos Semiconductor Technology Co.Ltd does not warrant or convey any license eith- er expressed or implied under its patent rights,nor the rights of others.Reproduction of inform- ation in Reasunos's data sheeets or data books is permissible only if reproduction is without modification oralteration.Reproduction of this information with any alteration is an unfair and deceptive business practice. Reasunos Semiconductor Technology Co.Ltd is not responsi- ble or liable for such altered documentation.

Resale of Reasunos's products with statements different from or beyond the parameters stated by Reasunos Semiconductor Technology Co.Ltd for that product or service voids all exp- ress or implied warrantees for the associated Reasunos's product or service and is unfair and deceptive business practice. Reasunos Semiconductor Technology Co.Ltd is not responsi- ble or liable for such statements.

Life Support Policy:

Reasunos Semiconductor Technology Co.Ltd's Products are not authorized for use as cri- tical components in life support devices or systems without the expressed written approval of Reasunos Semiconductor Technology Co.Ltd.
As used herein:
1. Life support devices or systems are devices or systems which: a.are intended for surgical implant into the human body, b.support or sustain life,
c.whose failuer to when properly used in accordance with instructions for used provided in the laeling,can be reasonably expected to result in significant injury to the user.

2.A critical component is any component of a life support device or system whose failure to system whose failure to perform can be reasonably expected to cause the failure of the life support device or system,or to affect its safety or effectiveness.