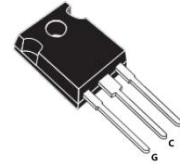


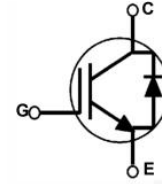
Features

- High Current Capability
- Low Saturation Voltage:
 $V_{CE(sat)} = 1.25 \text{ V @ } I_C = 60 \text{ A}$
- High Input Impedance
- RoHS Complaint



Applications

- PDP TV



Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Collector to Emitter Voltage		V _{CES}	330	V
Gate to Emitter Voltage		V _{GES}	±30	
Collector Current	T _C =25°C	I _C	160	A
	T _C =100°C		80	
Pulsed Collector Current TC=25°C		I _{CM}	450	
Diode forward current @ TC= 100°C		I _F	40	A
Maximum Power Dissipation TC=25°C		P _D	420	W
Maximum Power Dissipation TC=100°C			180	
Operating Junction Temperature		T _J	-55 to 150	°C
Storage Temperature Range		T _{stg}	-55 to 150	
Maximum Lead Temp. for soldering Purposes, 1/8” from case for 5 seconds		T _L	300	

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}(\text{IGBT})$		0.3	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}(\text{Diode})$		0.8	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$		35	

Package Marking and Ordering Information

Device Marking	Device	Package	MOQ
MSG80N350FL	MSG80N350FL	TO-247	

Electrical Characteristics of the IGBT $T_C = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbo l		Test Conditions	Min	Typ	Max	Unit
On/off Characteristics							
G-E Threshold Voltag	V _{GE(th)}	I _C = 250uA, V _{CE} = V _{GE}	2.5	4	5.5	V	
Collector to Emitter Saturation Voltage	V _{CE(sat)}	I _C = 60A, V _{GE} = 15V	-	1.25	1.6		
Collector to Emitter Breakdown Voltage	B _{VCE}	V _{GE} = 0V, I _C = 400μA	330	-	-		
Collector Cut-Off Curren	I _{CE}	V _{CE} = V _{CES} , V _{GE} = 0	-	-	400	μA	
G-E Leakage Curren	I _{GE}	V _{GE} = V _{GES} , V _{CE} = 0V	-	-	±400	nA	
Dynamic Characteristics							
Input Capacitance	Cies	VCE = 30V, VGE = 0V f = 1MHz	-	3900	-	pF	
Output Capacitance	Coes		-	320	-		
Reverse Transfer Capacitance	Cres		-	200	-		
Switching Characteristics							
Turn-On Delay Time	td(on)	VCC = 200V, IC = 40A, RG = 5Ω, VGE = 15V, Resistive Load, TC = 25°C	-	33	-	nS	
Rise Tim	tr		-	120	-		
Turn-Off Delay Tim	td(off)		-	160	-		
Fall Time	tf		-	220	260		
Turn-On Delay Time	td(on)	VCC = 200V, IC = 40A, RG = 5Ω, VGE = 15V, Resistive Load, TC = 125°C	-	38	-		
Rise Time	tr		-	120	-		
Turn-Off Delay Tim	td(off)		-	163	-		
Fall Time	tf		-	320	350		
Total Gate Charge	Qg	VCE = 200V, IC = 40A, VGE = 15V	-	175	-	nC	
Gate to Emitter Charg	Qge		-	25	-		
Gate to Collector Charg	Qgc		-	73	-		

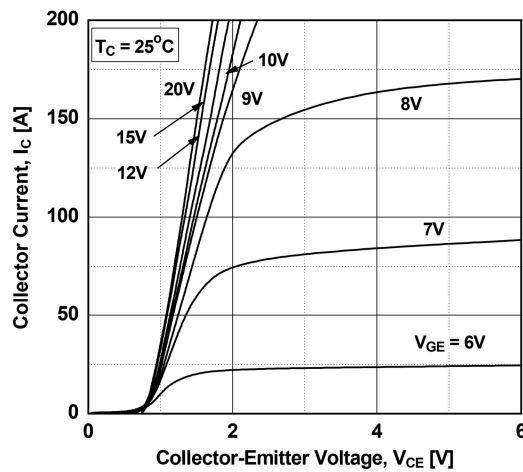
Electrical Characteristics of the Diode $T_C = 25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Diode Forward Voltage	V _{FM}	I _F = 30A	T _C =25℃	-	1.00	1.25	V
Diode Reverse Recovery Time	t _{rr}	I _F =20A, di _F /dt = 200A/μs	T _C =25℃	-	33	-	ns
			T _C =125℃	-	50	-	
Diode Peak Reverse Recovery Cyrrent	I _{rr}		T _C =25℃	-	4	-	A
			T _C =125℃	-	6	-	
Diode Reverse Recovery	Q _{rr}			T _C =25℃	-	50	-

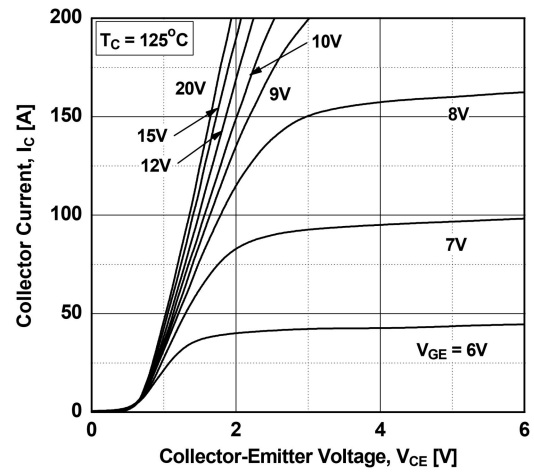
Charge			$T_C = 125^\circ\text{C}$	-	120	-	
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Typical Performance Characteristics

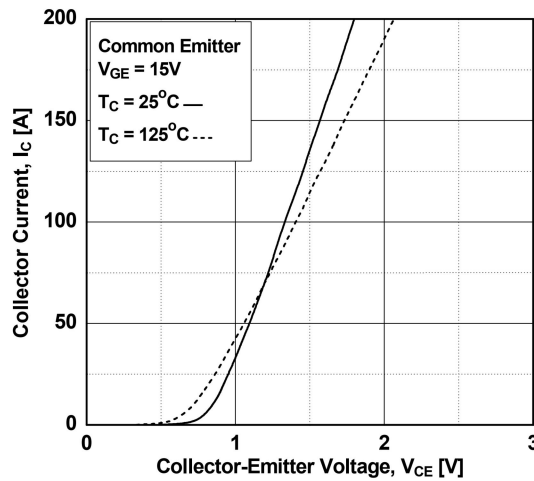
Typical Output Characteristics



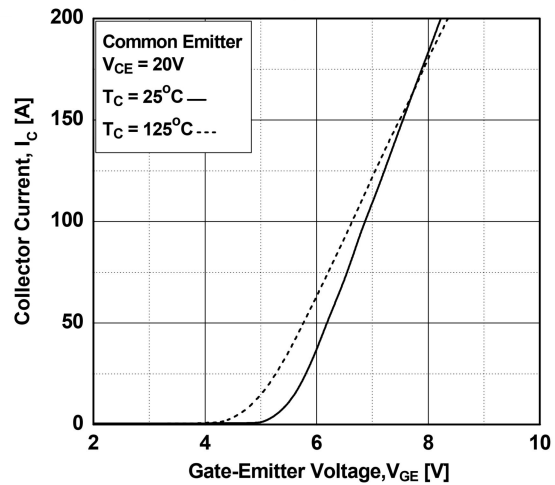
Typical Output Characteristics



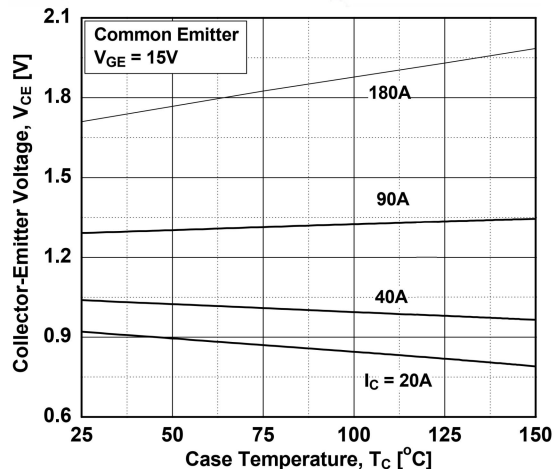
Typical Saturation Voltage Characteristics



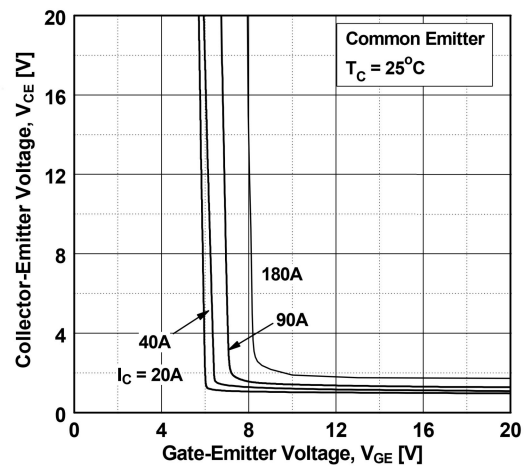
Transfer Characteristics



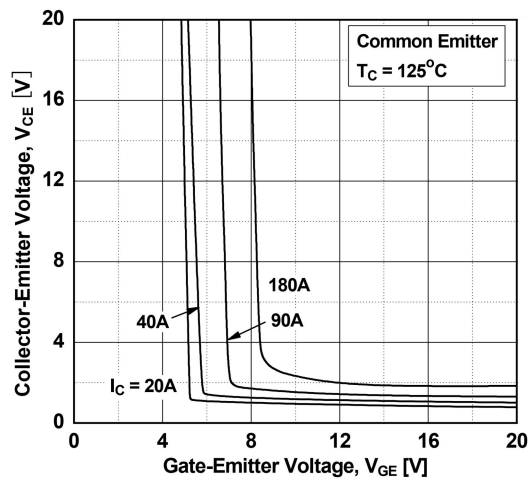
Saturation Voltage vs. Case Temperature at Variant Current Level



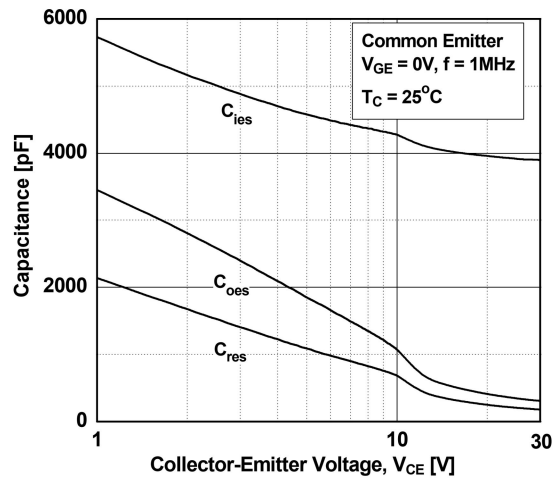
Saturation Voltage vs. V_{GE}



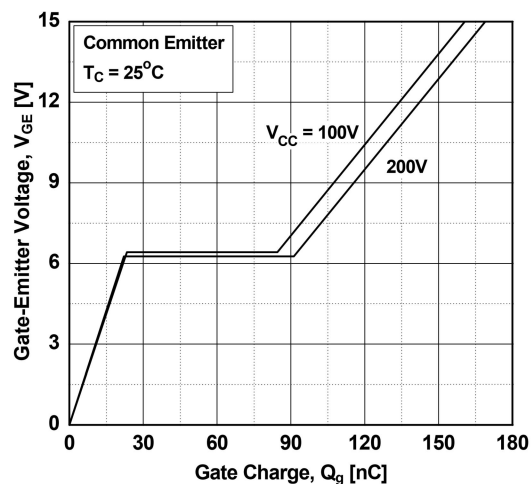
Saturation Voltage vs. V_{GE}



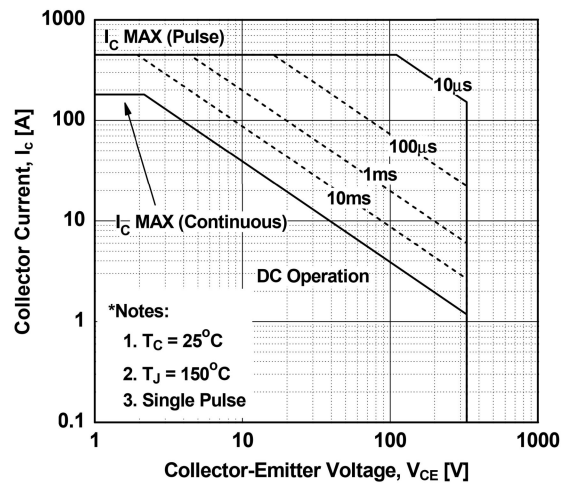
Capacitance Characteristics



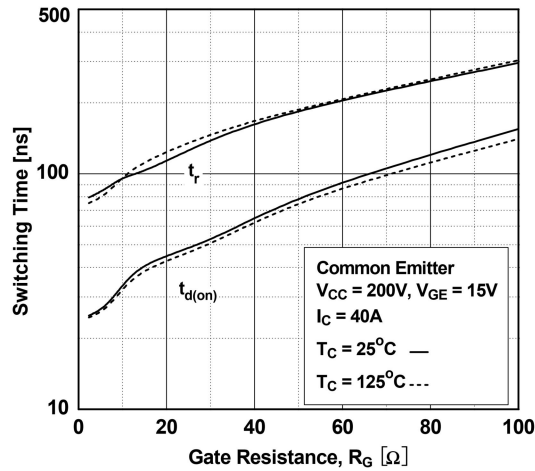
Gate charge Characteristics



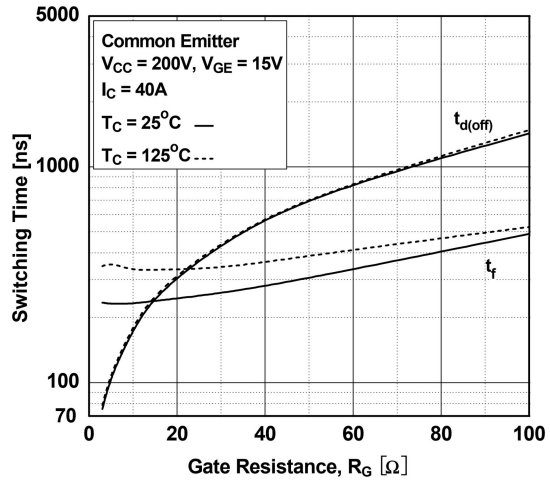
SOA Characteristics



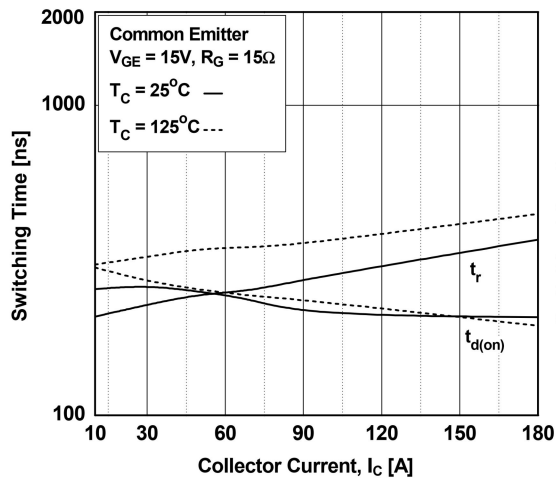
Turn-on Characteristics vs. Gate Resistance



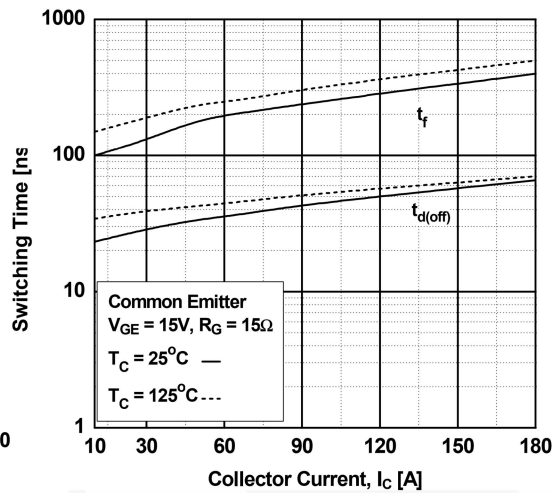
Turn-off Characteristics vs Gate Resistance



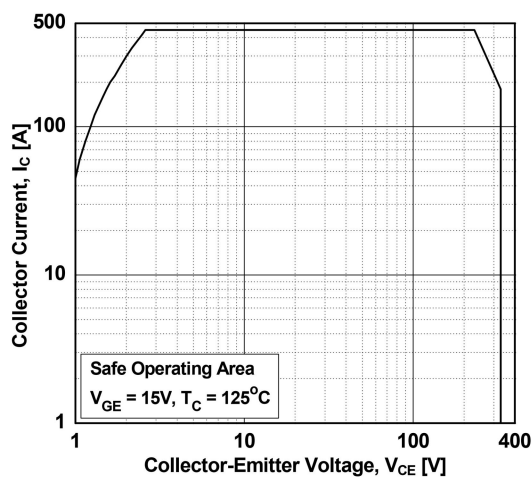
Turn-on Characteristics vs. Collector Current



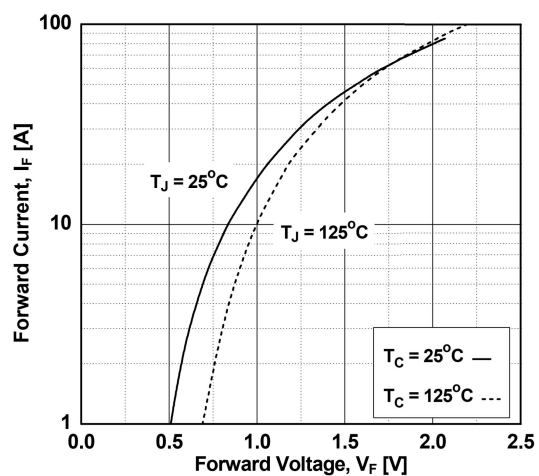
Turn-off Characteristics v Collector Current

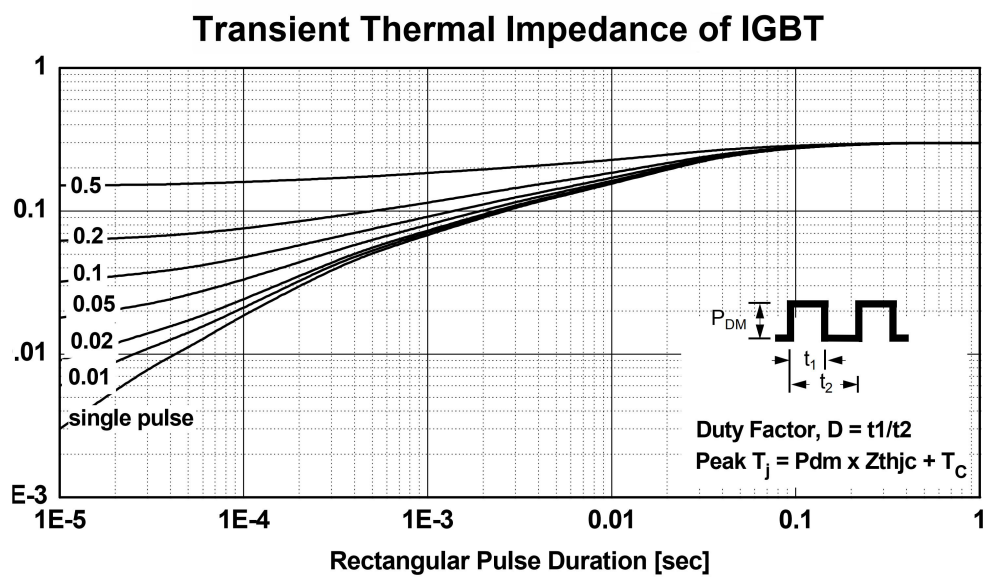
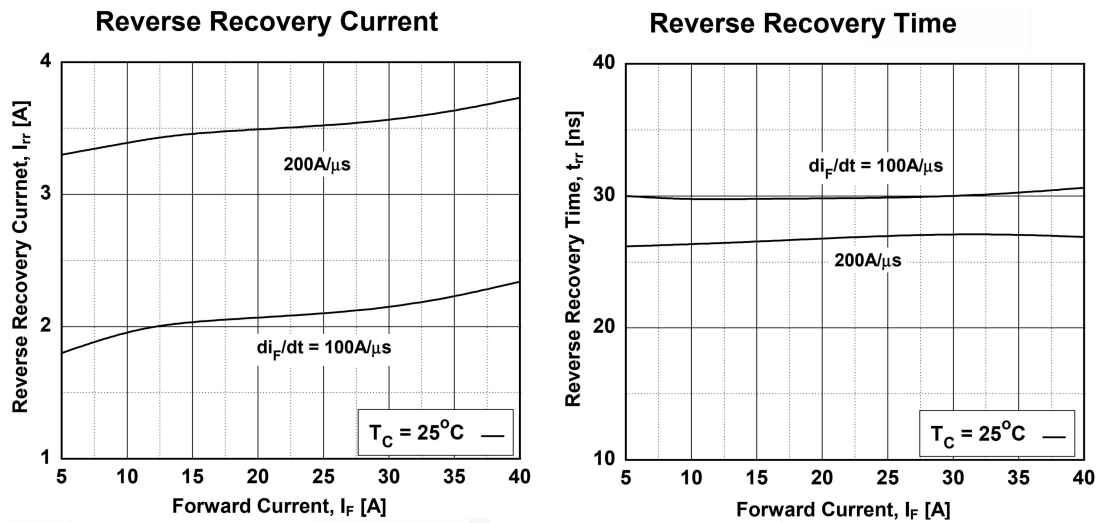


Turn off Switching SOA Characteristics

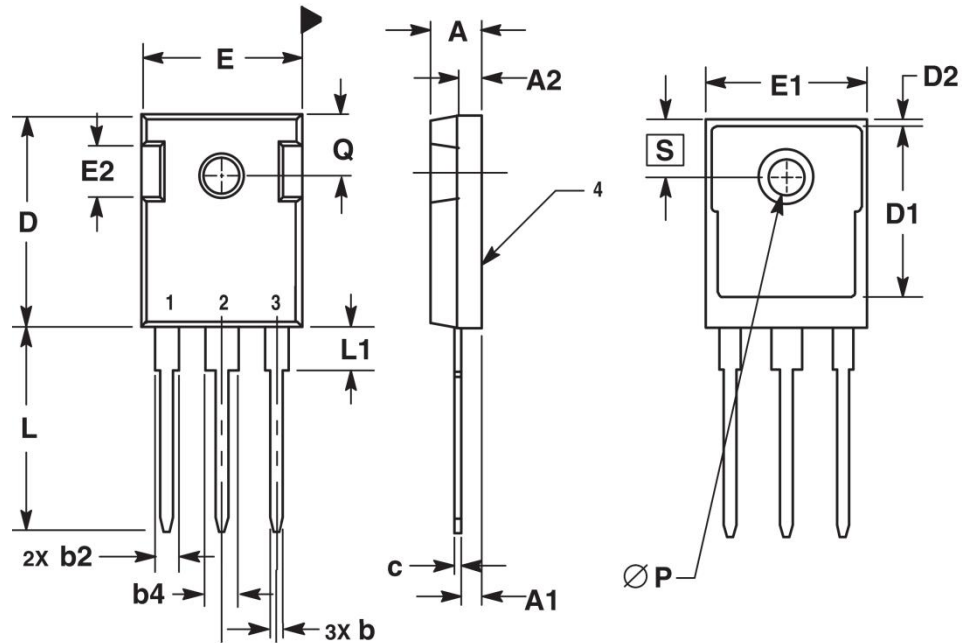


Forward Characteristics





Package outline dimension



Symbol	Min	Max	Unit
A	4.7	5.31	mm
A1	2.21	2.59	
A2	1.5	2.49	
b	1	1.4	
b2	1.65	2.39	
b4	2.59	3.43	
c	0.38	0.89	
D	20.8	21.46	
D1	13.08	-	
D2	0.51	1.35	
E	15.49	16.26	
E1	13.46	-	
E2	4.32	5.49	
e	5.46BSC		
L	19.81	20.32	
L1	-	4.5	
P	3.56	3.66	
Q	5.38	6.2	
S	6.15BSC		