

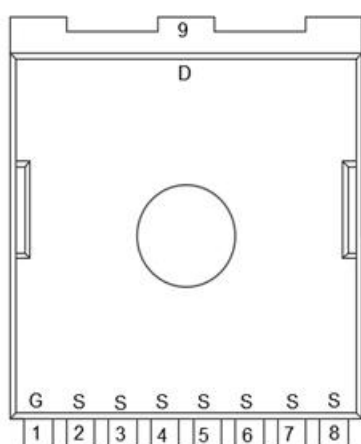
LSG12N10TL-C-AT 100V N-Channel MOSFET
Features

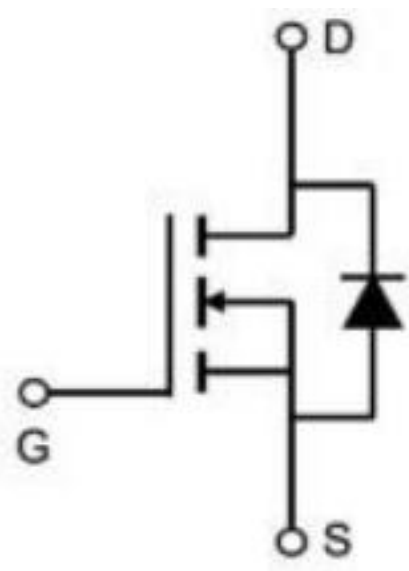
- Advanced SGT MOS technology
- Low Thermal Resistance
- Low Gate Charge
- Halogen-Free & Lead-Free
- 100% EAS Test
- 100% Rg Test
- Qualified to AEC-Q101 Standards for High Reliability

Applications

- Motor/Body Load Control
- Battery Management
- DC-DC converters and Off-line UPS

Pin Configuration

LSG12N10TL-C-AT(TOLL)			
 Top View TOLL			
Pin	Description	Pin	Description
1	Gate	6	Source
2	Source	7	Source
3	Source	8	Source
4	Source	9	Drain
5	Source		



Marking Information

Part Marking	Part Number	LFC code
12N10C YWWXXX	12N10C	YWWXXX

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C =25°C	360	A
		T _C =100°C	254.1	
I _{DM}	Pulsed Drain Current ¹		1440	A
E _{AS}	Single Pulse Avalanche Energy ²		1806	mJ
P _D	Power Dissipation(T _C =25°C)		500	W
T _J	Operating Junction Temperature Range		-55 to +175	°C
T _{STG}	Storage Temperature Range		-55 to +175	°C
R _{θJC}	Thermal Resistance-Junction to Case ³		0.25	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient ³		62.5	°C/W

Note:

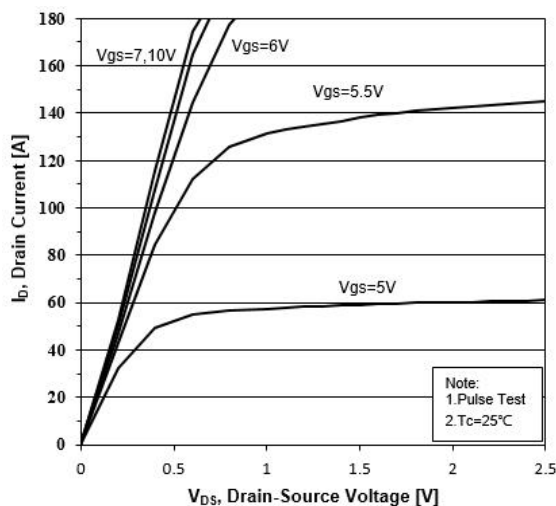
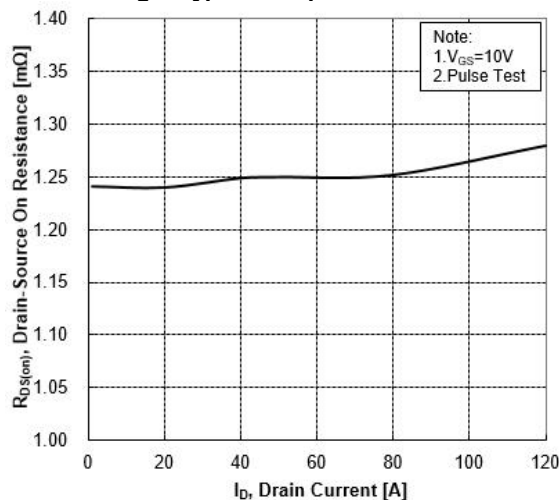
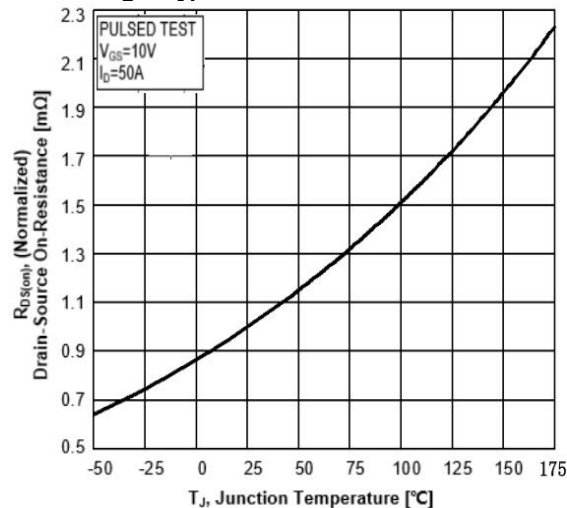
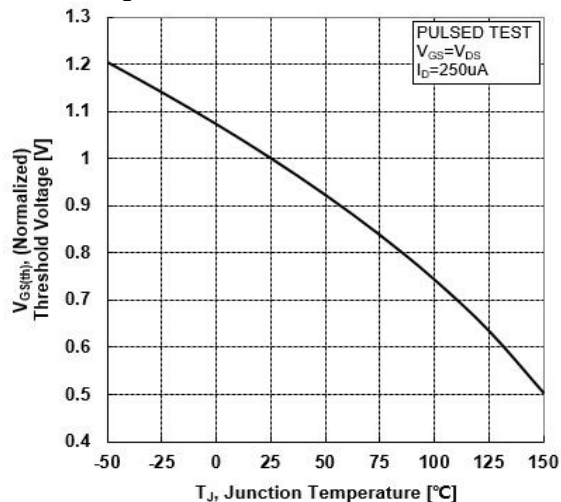
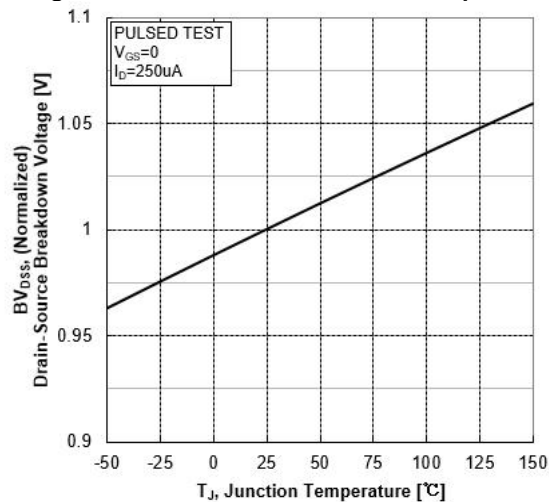
1. Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%, Repetitive rating, pulse width limited by T_{J(MAX)} = 150°C.
2. Limited by T_{J(MAX)}, starting T_J = 25°C, L = 0.5mH, R_g = 25Ω, V_{DD} = 50V, V_{GS} = 10V.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Electrical Characteristics

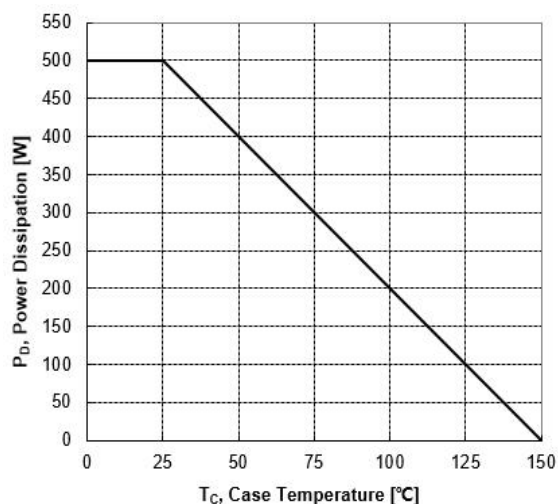
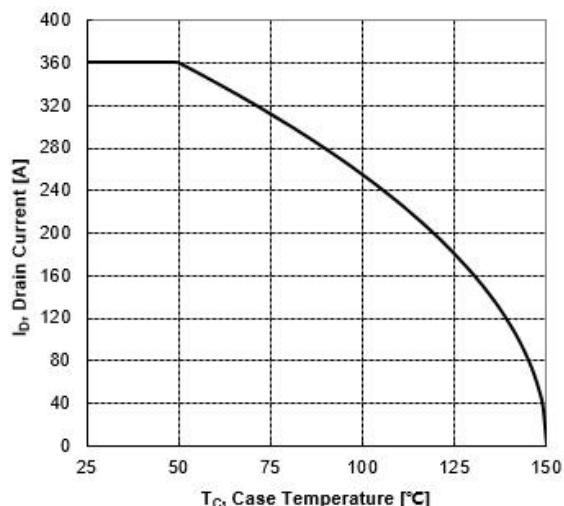
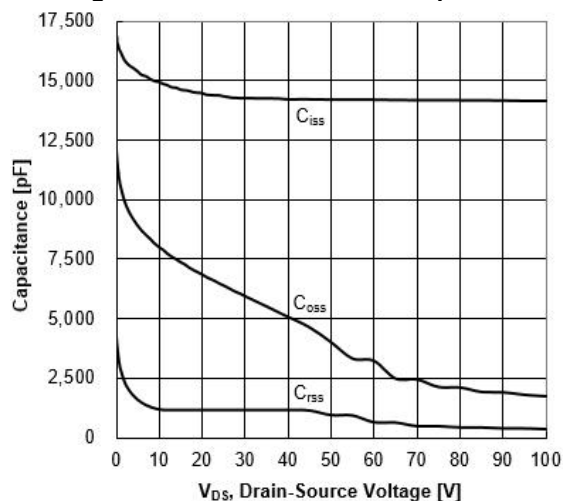
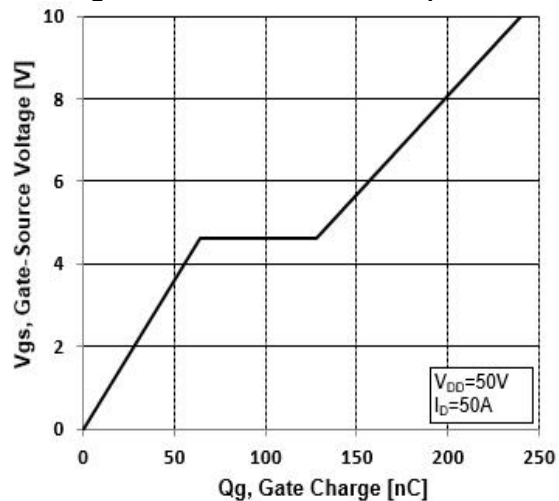
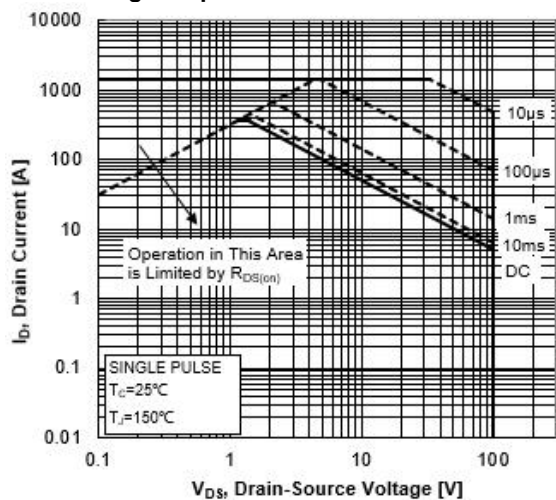
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2		4	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	uA
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =50A		1.0	1.3	mΩ
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz		14200		pF
C _{oss}	Output Capacitance			4000		
C _{rss}	Reverse Transfer Capacitance			935		
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =50A		240		nC
Q _{gs}	Gate-Source Charge			64		
Q _{gd}	Gate-Drain Charge			64		
t _{d(on)}	Turn-On Time	V _{DS} =50V, V _{GS} =10V, I _D =50A		45		ns
T _r				51		
t _{d(off)}	Turn-Off Time			123		
T _f				52		
Body-Diode						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =1A			1.2	V

Typical Performance Characteristics


Fig.1 Typical Output Characteristics

Fig.2 Typical Transfer Characteristics

Fig.3 On-Resistance vs. Drain Current

Fig.4 On-Resistance vs. Junction Temperature

Fig.5 $V_{GS(th)}$ vs. Junction Temperature
Fig.6 $V_{(BR)DSS}$ vs. Junction Temperature

Typical Performance Characteristics


Fig.7 Maximum P_D vs. Case Temperature

Fig.8 Maximum I_D vs. Case Temperature

Fig.9 Capacitance Characteristics

Fig.10 Typical Gate Charge vs. Gate-Source Voltage

Fig.11 Safe Operating Area

Typical Performance Characteristics

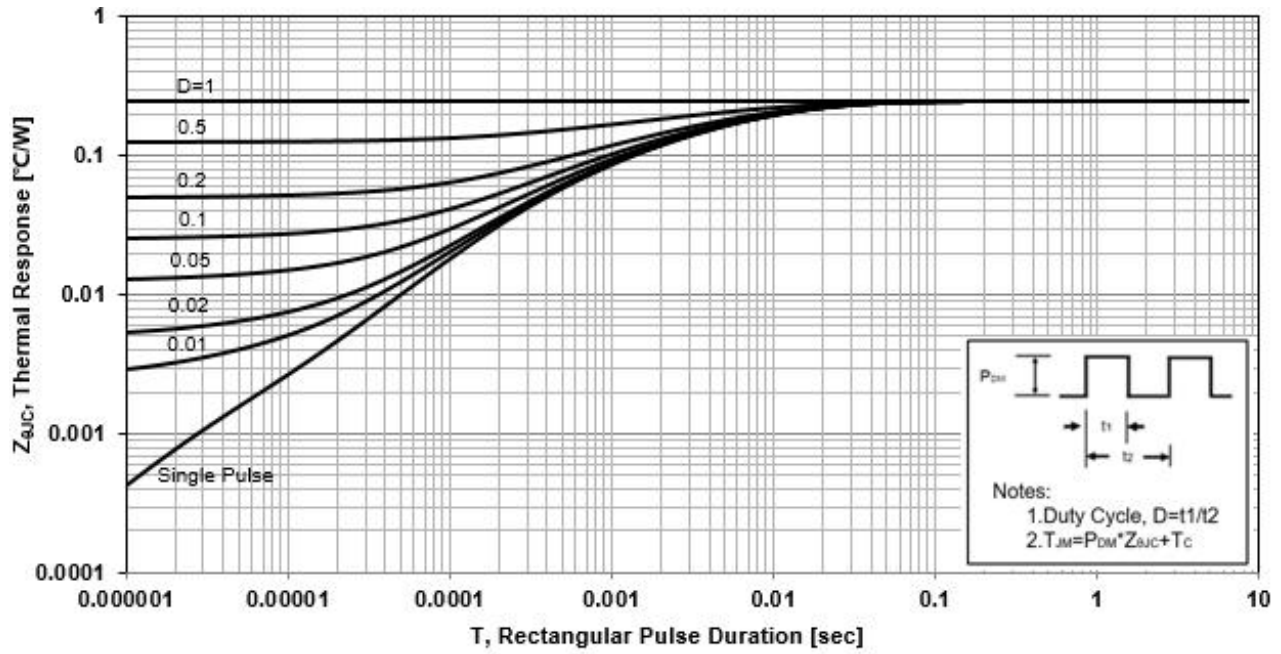
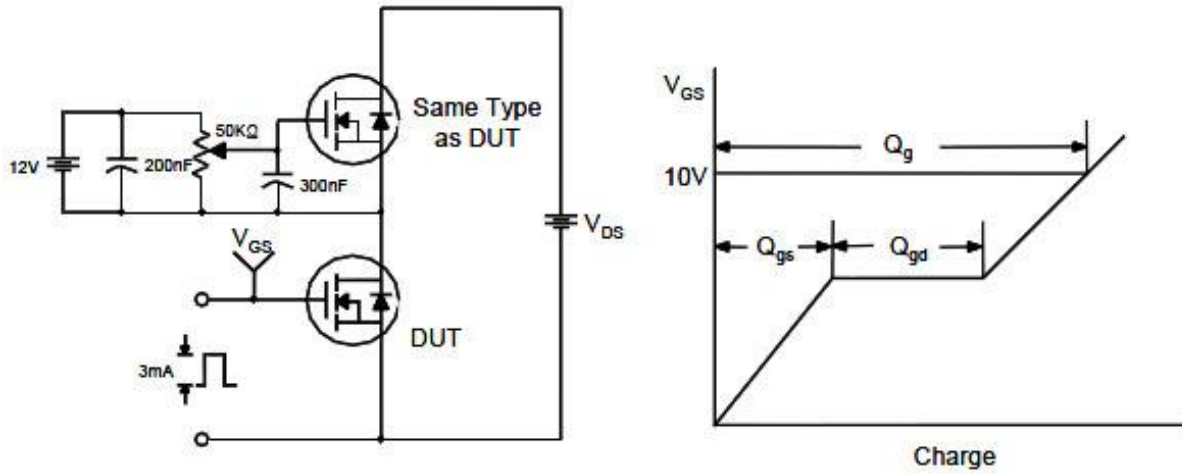


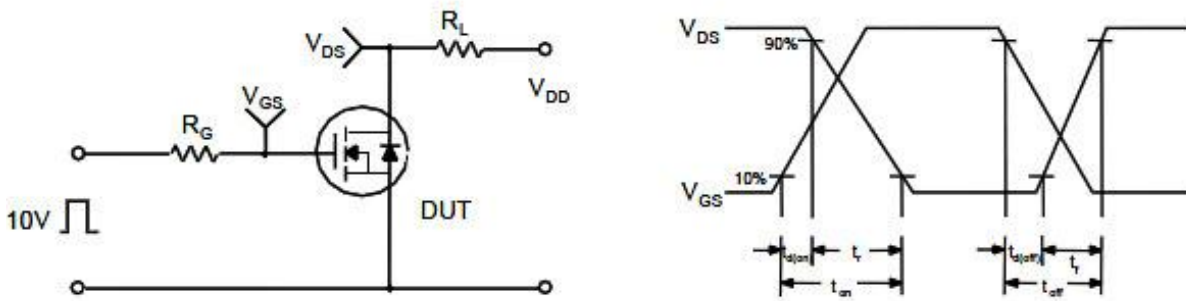
Fig.12 Transient Thermal Impedance

Typical Characteristics

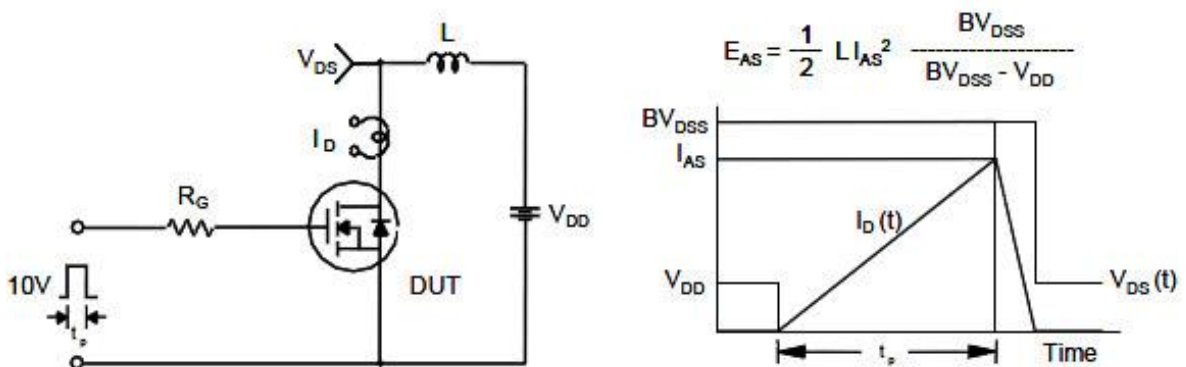
Gate Charge Test Circuit & Waveform

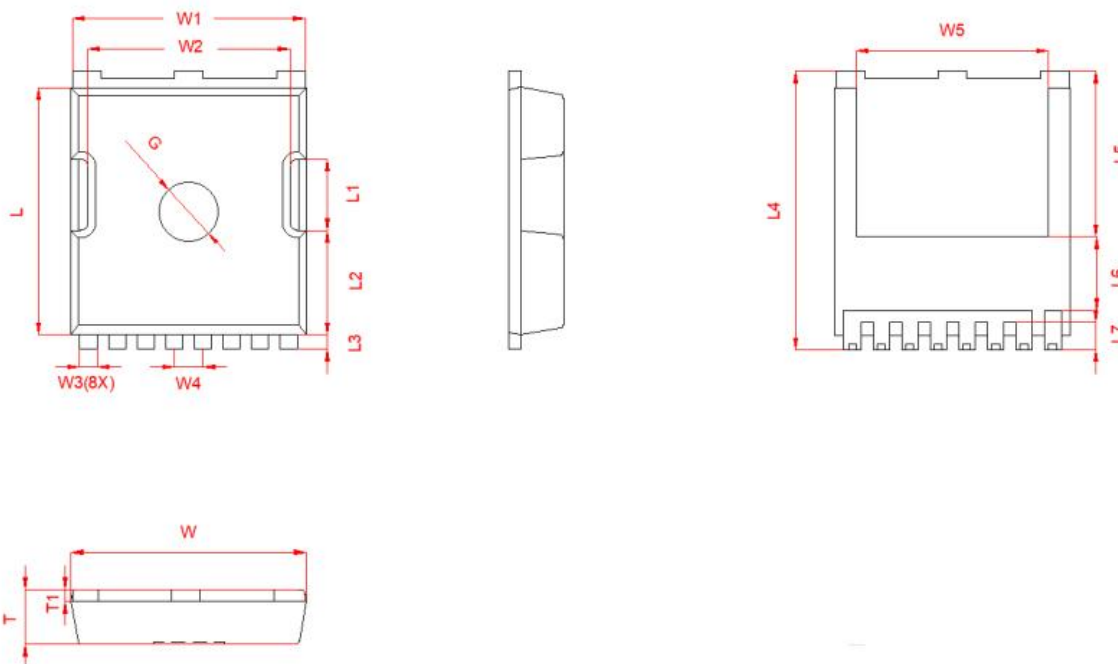


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension(Units:mm)
TOLL


Symbol	Min	Max	Symbol	Min	Max
W	9.70	10.10	L3	0.50	0.70
W1	9.70	9.90	L4	11.48	11.88
W2	8.50 BSC		L5	6.90 BSC	
W3	0.60	0.85	L6	3.10 BSC	
W4	1.10	1.30	L7	1.10	1.30
W5	8.10 BSC		T	2.20	2.40
L	10.28	10.58	T1	0.40	0.60
L1	3.00 BSC		G(Φ)	2.50 BSC	
L2	4.20	4.60			