

N-Channel MOSFET

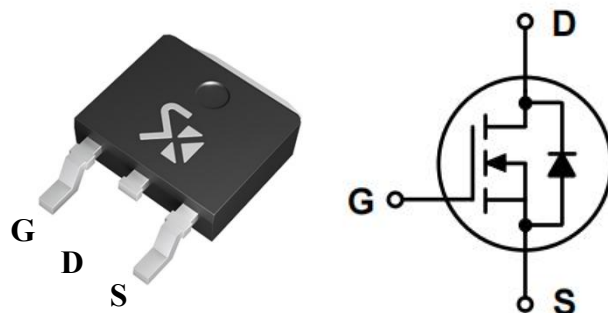
$BV_{DSS}, T_A=25^{\circ}\text{C}$	$R_{DS(ON), \max}@10\text{V}$	$I_D, T_C=25^{\circ}\text{C}$
100 V	5.2mΩ	108A

Features

- $BV_{DSS} > 100\text{V}$
- $I_D = 108\text{A}$
- $R_{DS(ON), \max}=5.2\text{m}\Omega@V_{GS}=10\text{V}$
- $R_{DS(ON), \max}=8.6\text{m}\Omega@V_{GS}=4.5\text{V}$

Applications

- Portable appliances
- Power management
- High efficiency DC/DC Converters



TO-252

Maximum Ratings($T_A=25^{\circ}\text{C}$, unless otherwise noted.)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Operation Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	108	A
Drain Current-Continuous@ $T_C=100^{\circ}\text{C}$		68	A
Pulsed Drain Current@ $V_{GS}=10\text{V}$	I_{DM}	430	A
Single Pulse Avalanche Energy@ $L=0.1\text{mH}$	E_{AS}	252	mJ
Junction and Storage Temperature Range	T_J, T_{STG}	$-55\sim+150$	$^{\circ}\text{C}$

Electrical Characteristics($T_J=25^{\circ}\text{C}$, unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	100			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0		3.0	V
Drain-Source on Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=54\text{A}$		4.8	5.2	mΩ
		$V_{GS}=4.5\text{V}, I_D=54\text{A}$		6.7	8.6	mΩ

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=50V,$ $f=1.0MHz$		2850		pF
Output Capacitance	C_{oss}			481		
Reverse Transfer Capacitance	C_{rss}			16		
Gate Series Resistance	R_G	$f=1.0MHz$		1.0		Ω
Total Gate Charge	Q_g	$V_{DS}=50V,$ $V_{GS}=10V,$ $I_D=40A$		62		nC
Gate Source Charge	Q_{gs}			21		
Gate Drain Charge	Q_{gd}			9		

Switching Characteristics

Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=10V,$ $I_D=40A,$ $V_{DS}=50V,$ $R_G=6\Omega$		27		ns
Rise Timer	t_r			15		
Turn-Off Delay Time	$t_{d(OFF)}$			52		
Fall Timer	t_f			15		

Drain-Source Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=108A$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F=40A,$ $di/dt=100A/\mu s$		40		ns
Reverse Recovery Charge	Q_{rr}			66		nC

Typical Characteristics

Figure 1. Output Characteristics

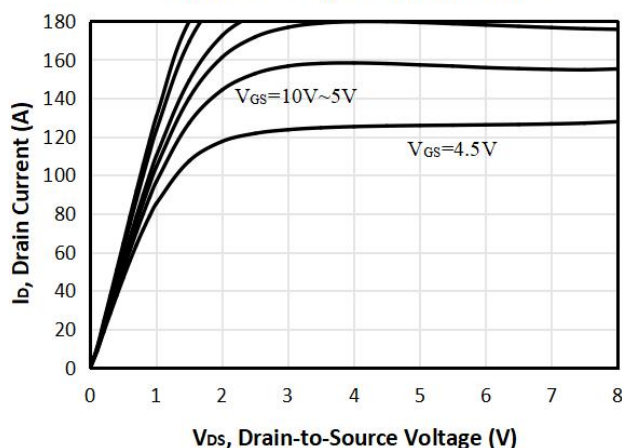


Figure 2. Transfer Characteristics

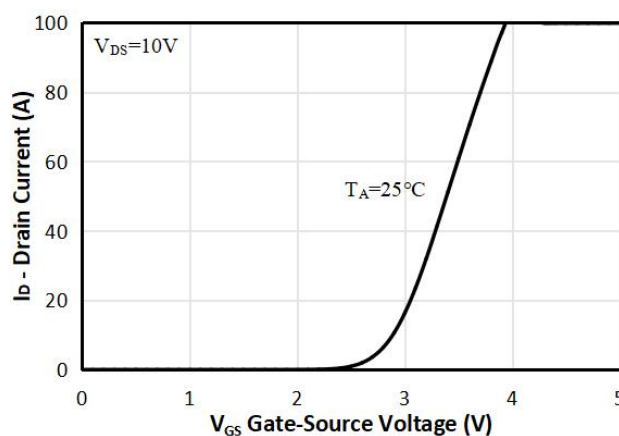


Figure 3. On-Resistance vs. Drain Current

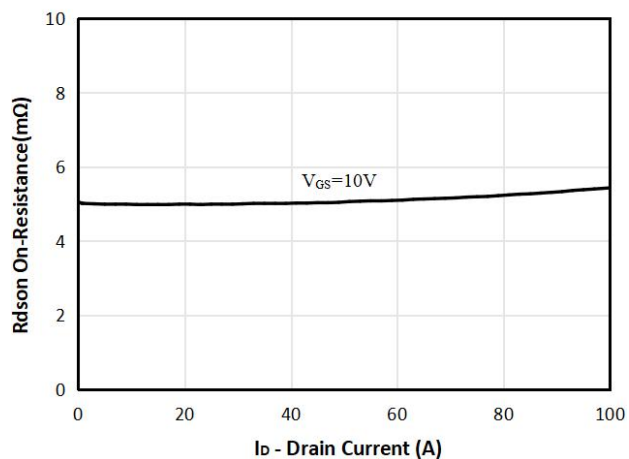


Figure 4. Source Current vs. Source-Drain Voltage

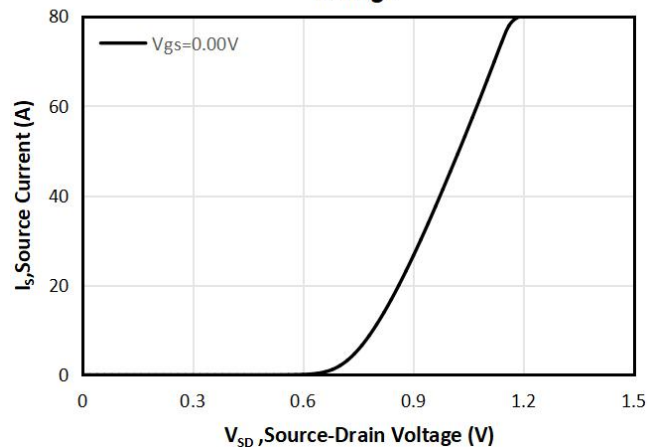


Figure 5. Capacitance Characteristics

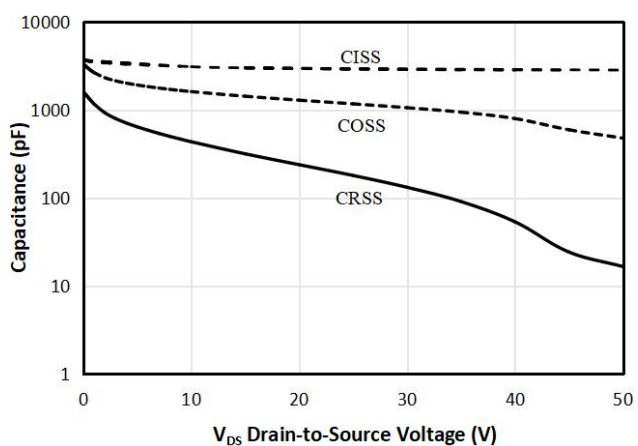


Figure 6. Gate Charge Characteristics

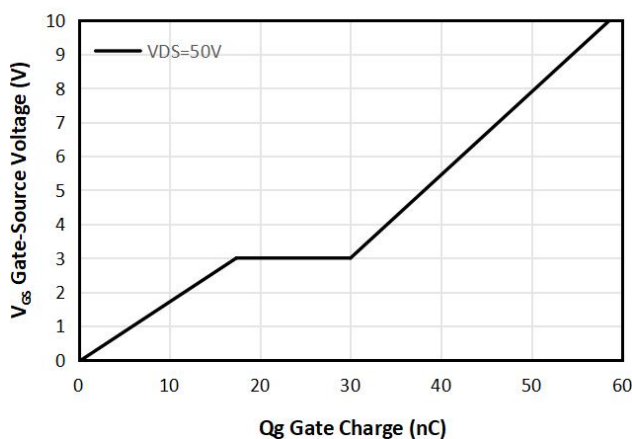


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

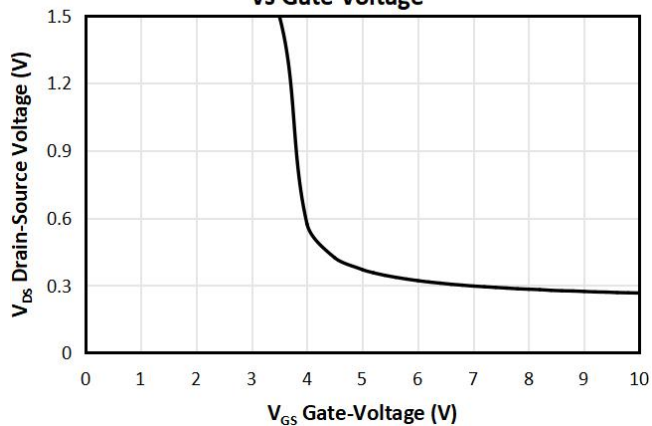
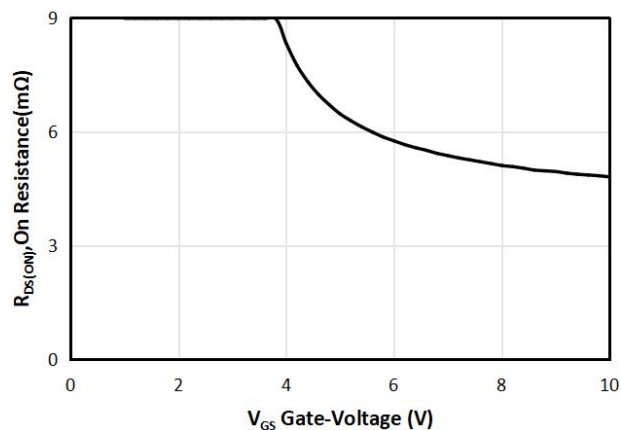


Figure 8. On-Resistance vs. Gate Voltage



Test Circuit and Waveforms

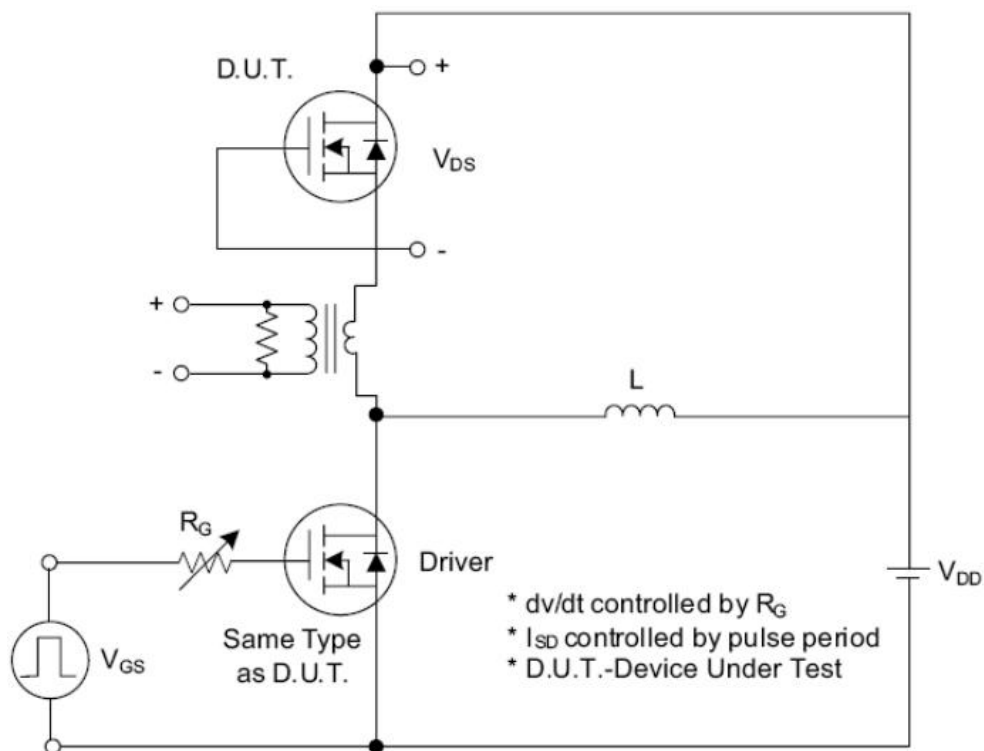


Fig. 1.1 Peak Diode Recovery dv/dt Test Circuit

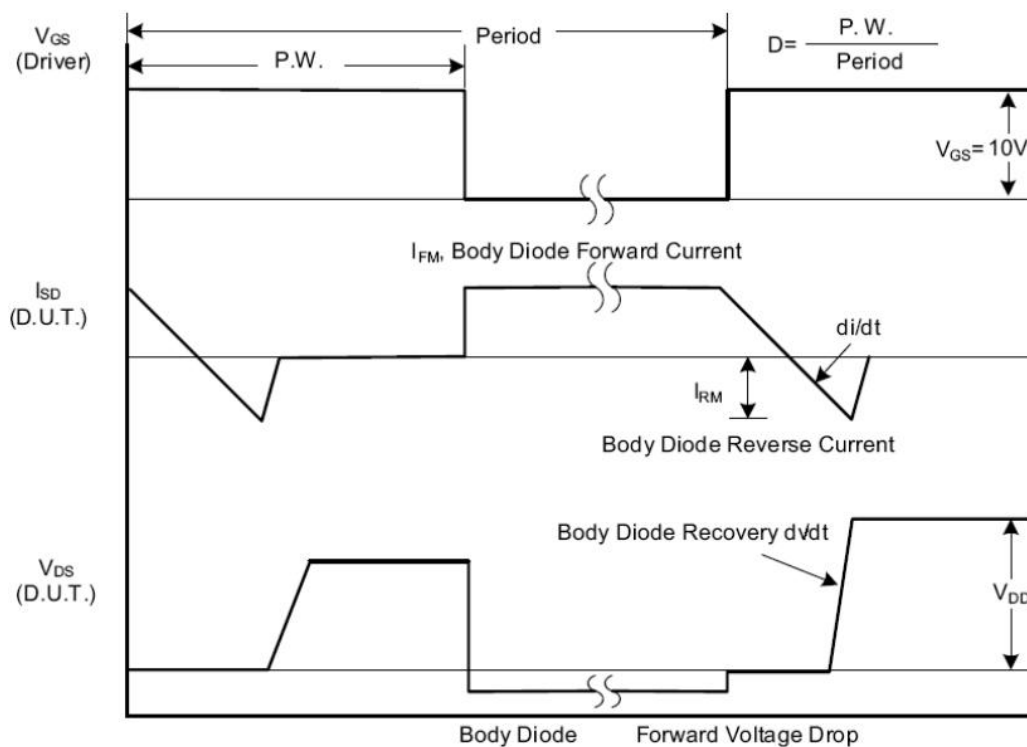


Fig. 1.2 Peak Diode Recovery dv/dt Waveforms

Test Circuit and Waveforms(Cont.)

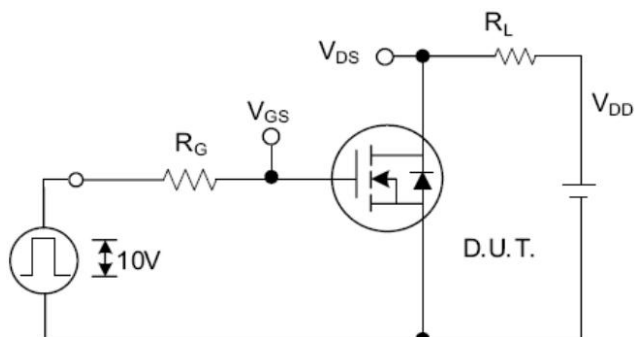


Fig. 2.1 Switching Test Circuit

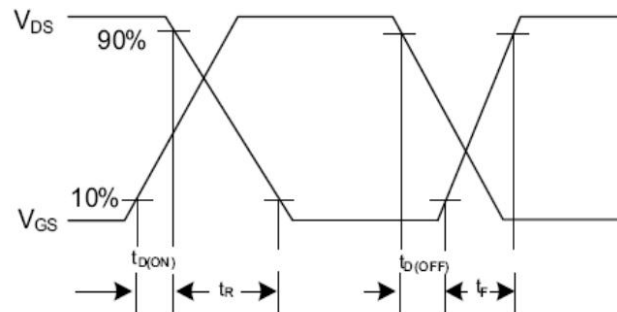


Fig. 2.2 Switching Waveforms

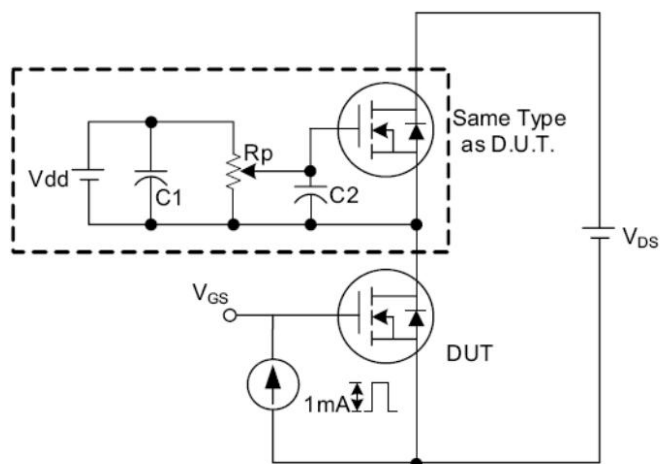


Fig. 3.1 Gate Charge Test Circuit

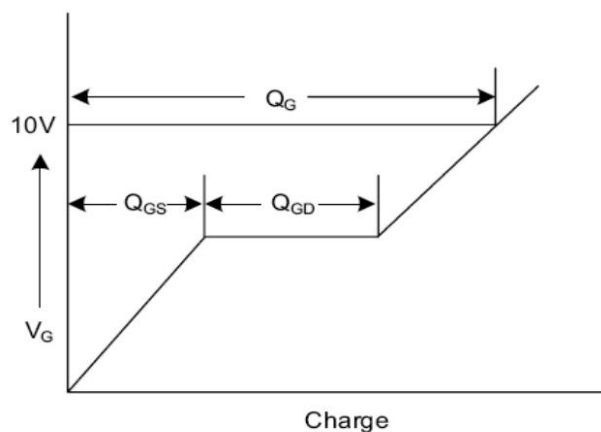


Fig. 3.2 Gate Charge Waveform

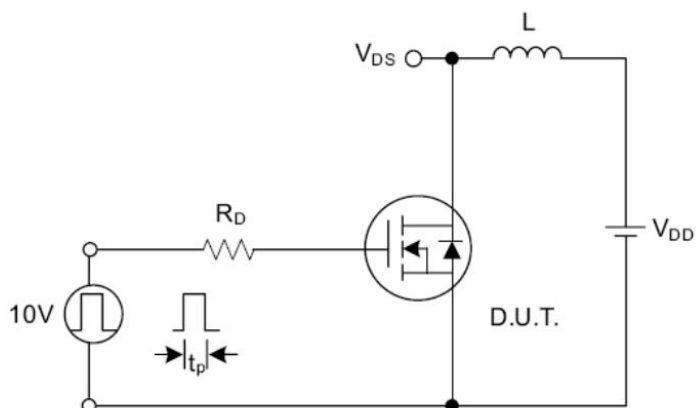


Fig. 4.1 Unclamped Inductive Switching Test Circuit

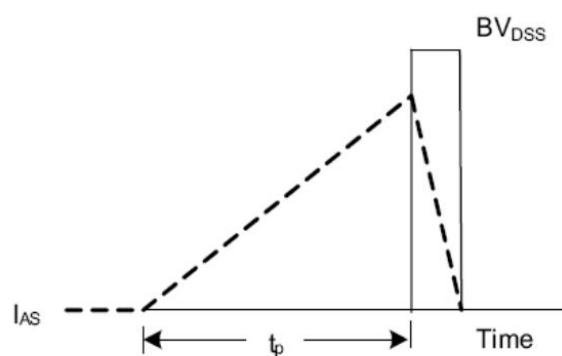
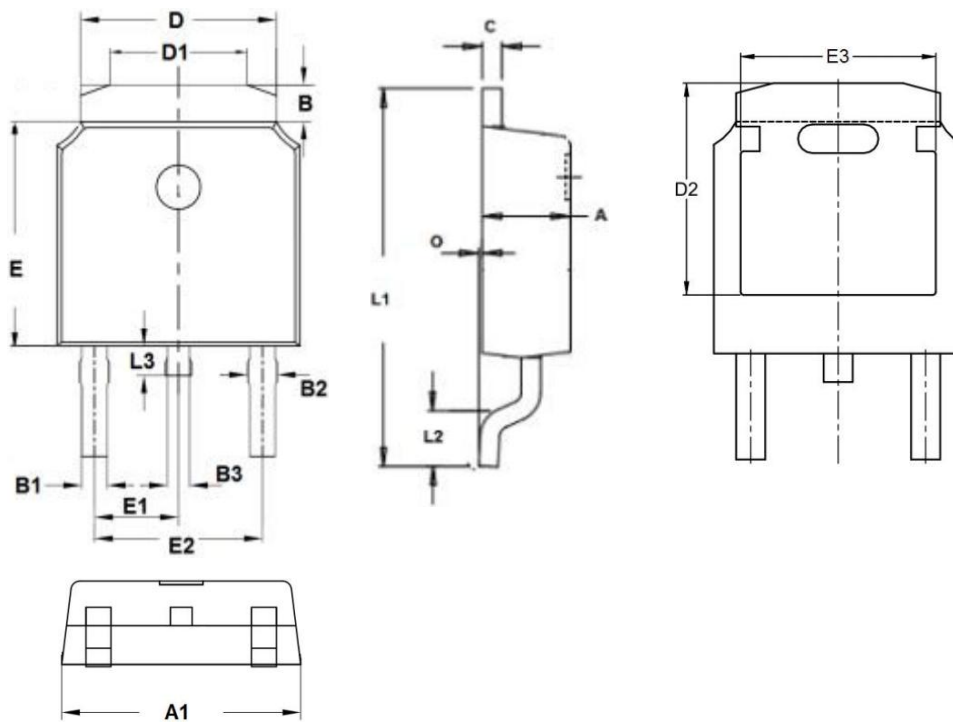


Fig. 4.2 Unclamped Inductive Switching Waveforms

Package Information

TO-252

Dimensions in mm



Symbol	Dimensions In Millimeter		Symbol	Dimensions In Millimeter	
	Min	Max		Min	Max
A	2.1	2.5	D2	5.0	5.4
A1	6.3	6.9	E	6.0	6.2
B	0.96	1.42	E1	2.29 TYP	
B1	0.67	0.77	E2	4.58 TYP	
B2	0.67	0.85	E3	4.6	5.0
B3	0.60	0.70	O	0	0.15
C	0.5 TYP		L1	9.9	10.5
D	5.3	5.5	L2	1.65 TYP	
D1	3.65	4.05	L3	0.6	1.0

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