SDM005G08YB

80V SGT N-Channel MOSFETs

Rev A.0

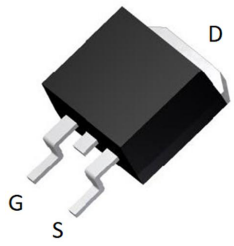
Feature

- Low $R_{DS(ON)}$
- Low Gate Charge
- High current Capability
- Green product (RoHS compliant) , lead free
- 100% UIS Tested, 100% Rg Tested

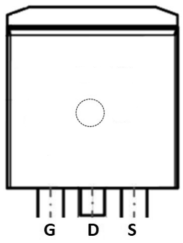
Product Summary

V_{DS}	80	V
$V_{GS(th)\_Typ}$	3.0	V
$R_{DS(ON)\_Typ}$ (at V_{GS} =10V)	4.0	mΩ
I_D (at V_{GS} =10V) (1)	154	A

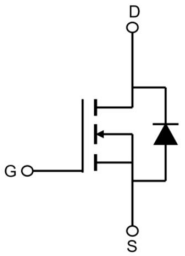
Type	Package	Marking	Outline	Media	Quantity (pcs)
SDM005G08YB	TO-263	M005G08B	Tape	13 "Reel	800



TO-263 top view



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings (Rating at T_C=25°C unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (1)	T_C=25°C	I_D	154	A
	T_C=100°C		97	
Pulsed Drain Current (2)		I_{DM}	465	A
Maximum Body-Diode Continuous Current		I_S	154	A
Avalanche Energy (3)		E_{AS}	338	mJ
Power Dissipation (4)	T_C=25°C	P_D	208	W
	T_C=100°C		83	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (Rating at T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS} =0V	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS} =0V	-	-	1	μA
		T_J=55°C	-	-	5	
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V, V_{GS} =±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	2	3	4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=20A	-	4	4.8	mΩ
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V	-	0.7	1.0	V
DYNAMIC PARAMETERS (5)						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	3367	-	pF
C_{oss}	Output Capacitance		-	1265	-	pF
C_{rss}	Reverse Transfer Capacitance		-	47	-	pF
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	-	1.1	-	Ω
SWITCHING PARAMETERS (5)						
Q_g(10V)	Total Gate Charge	V_{GS}=0~10V, V_{DS}=40V, I_D=20A	-	57	-	nC
Q_g(6V)	Total Gate Charge		-	39	-	nC
Q_{gs}	Gate Source Charge		-	18.5	-	nC
Q_{gd}	Gate Drain Charge		-	15.1	-	nC
$t_{D(on)}$	Turn-On Delay Time	V_{GS}=10V, V_{DS}=40V, R_L=2.0Ω, R_{GEN}=3Ω	-	17.7	-	ns
t_r	Turn-On Rise Time		-	29	-	ns
$t_{D(off)}$	Turn-Off Delay Time		-	33	-	ns
t_f	Turn-Off Fall Time		-	10.9	-	ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=20A, di/dt=100A/μs	-	59	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=20A, di/dt=100A/μs	-	97	-	nC

Thermal Resistances

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal resistance from junction to ambient	45	55	°C /W
$R_{\theta JC}$	Thermal resistance from junction to Case	0.6	0.78	°C /W

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous depends on the thermal & electro-mechanical application board design.

2. This single-pulse measurement was taken under T_{J_Max}=150°C.

3. This single-pulse measurement was taken under the following condition [L=3.0mH, V_{GS}=10V, V_{DD}=40V] while its value is limited by T_{J_Max}=150°C.

4. The power dissipation P_D is based on T_{J_Max}=150°C.

5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical and Thermal Characteristics

Figure 1: Saturation Characteristics

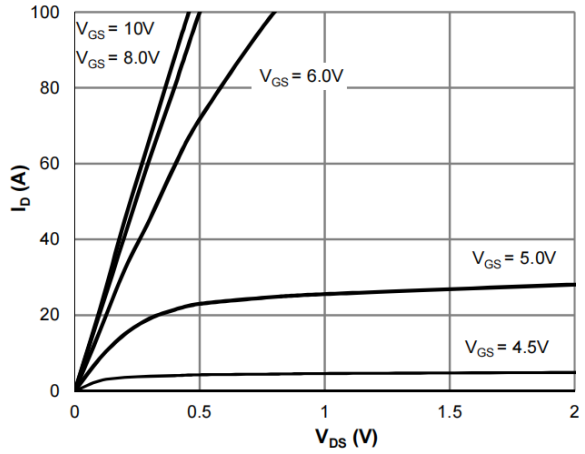


Figure 2: Transfer Characteristics

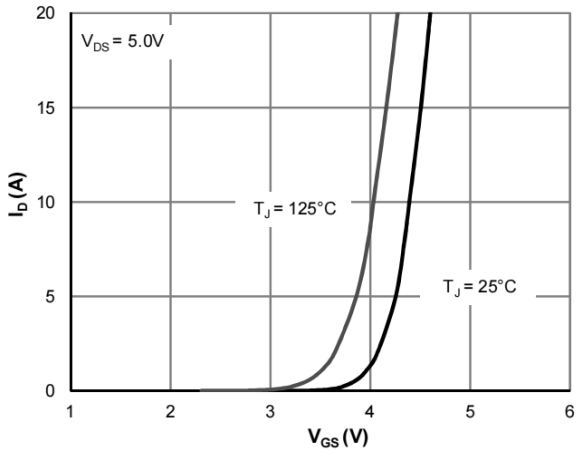


Figure 3: $R_{DS(ON)}$ vs. Drain Current

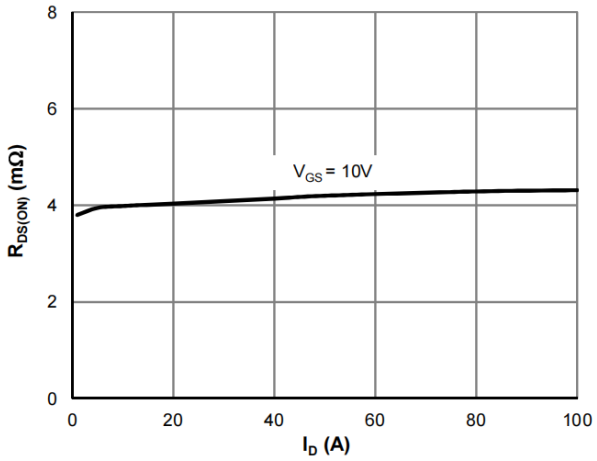


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

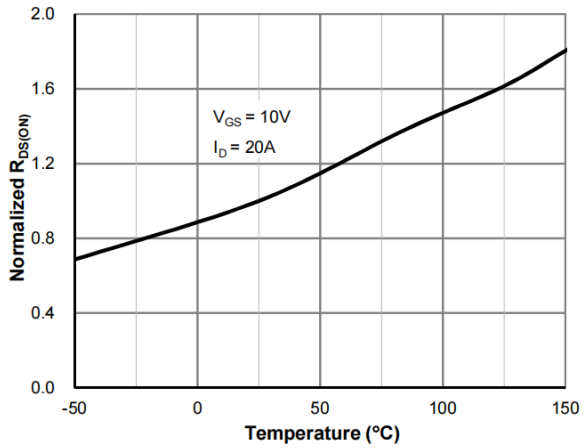


Figure 5: $R_{DS(ON)}$ vs. Gate-Source Voltage

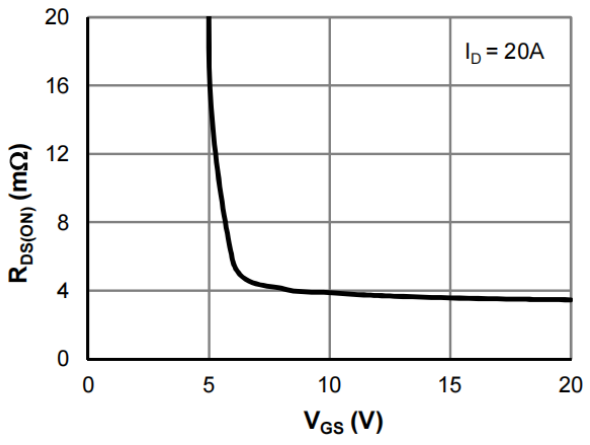
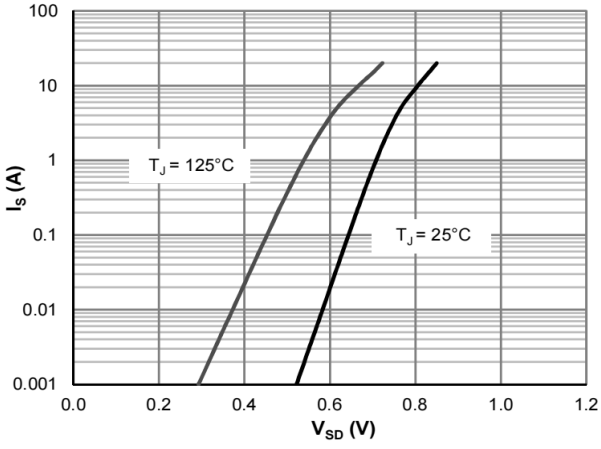


Figure 6: Body-Diode Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Gate-Charge characteristics

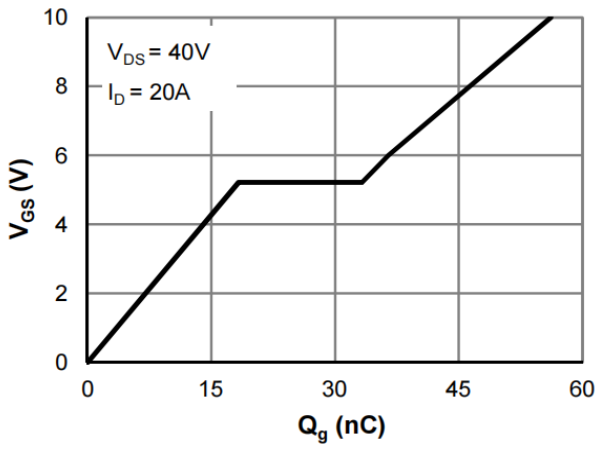


Figure 8: Capacitance characteristics

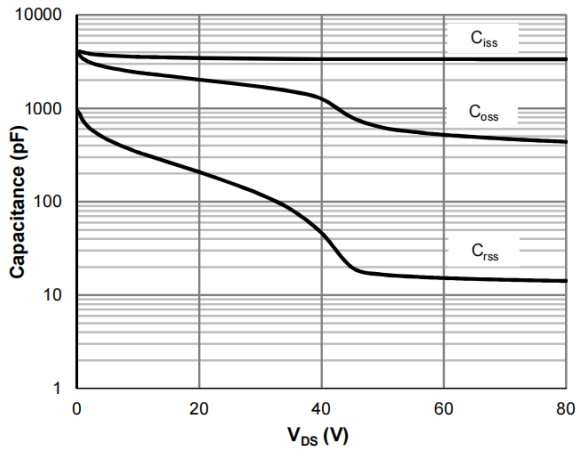


Figure 9: Current De-rating

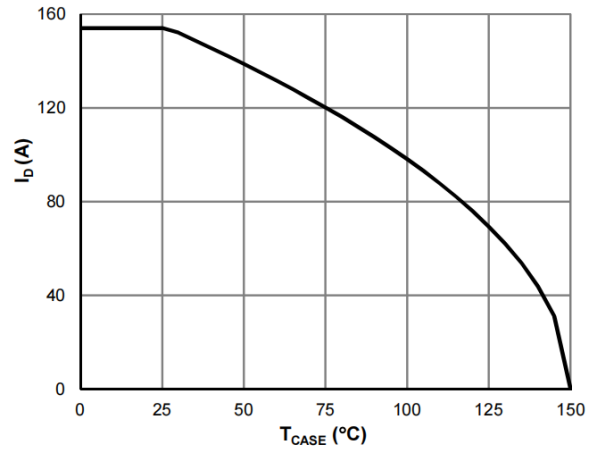


Figure 10: Power De-rating

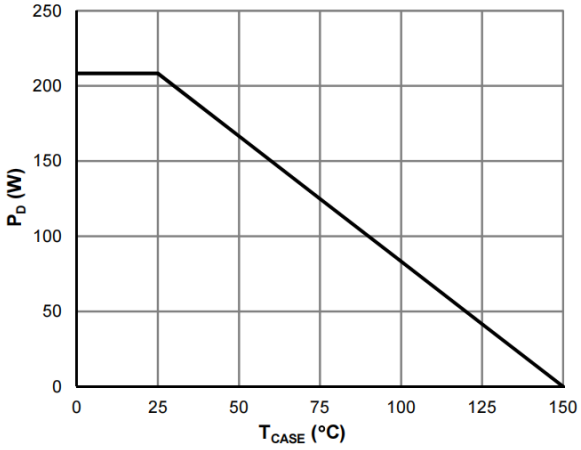


Figure 11: Maximum Safe Operating Area

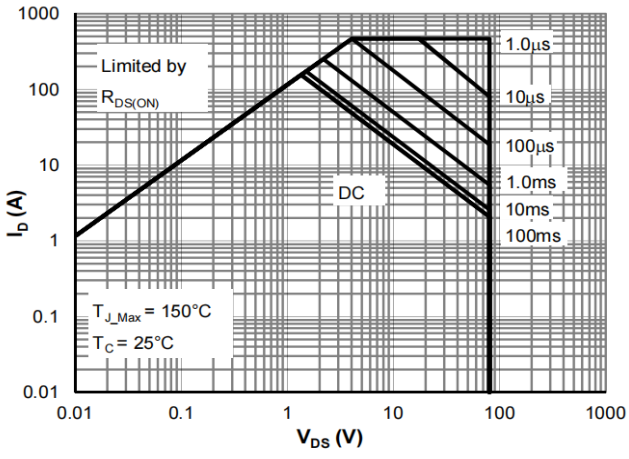
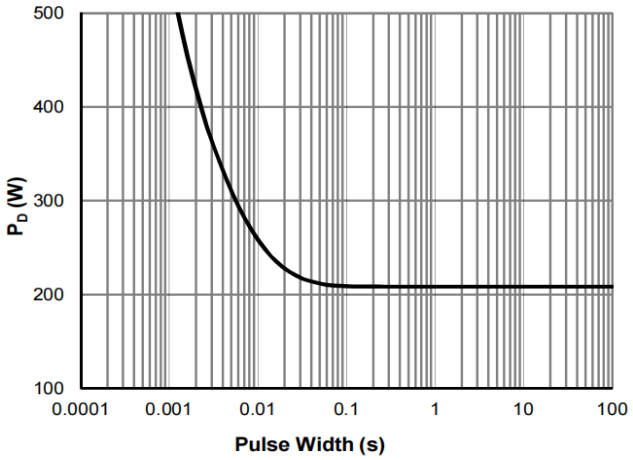
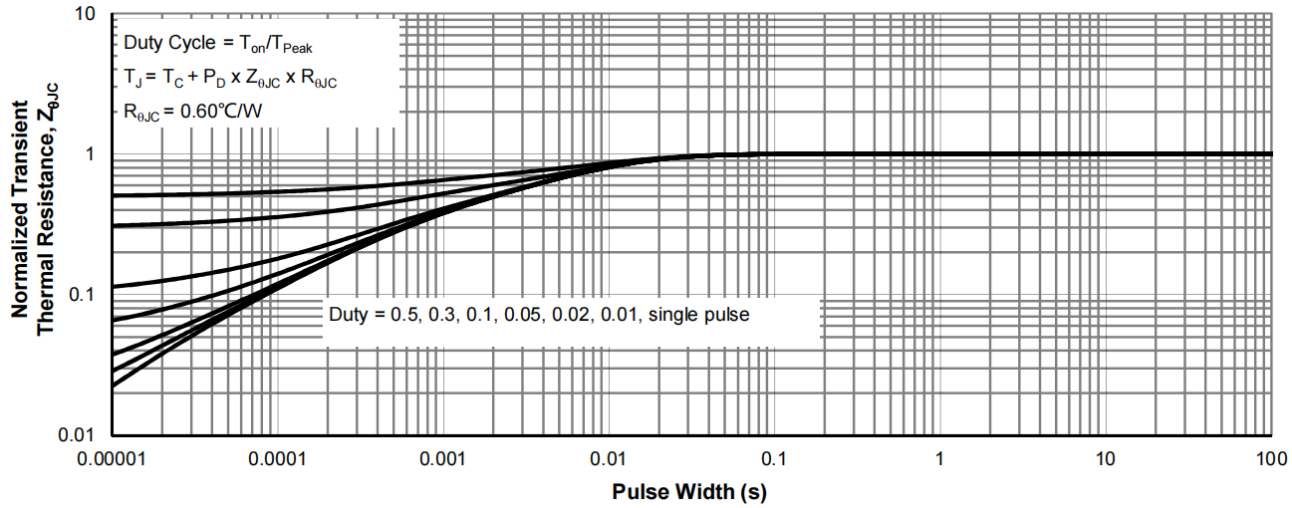


Figure 12: Normalized Maximum Transient Thermal Impedance



Typical Electrical and Thermal Characteristics

Figure 13: Normalized Maximum Transient Thermal Impedance



Test Circuit

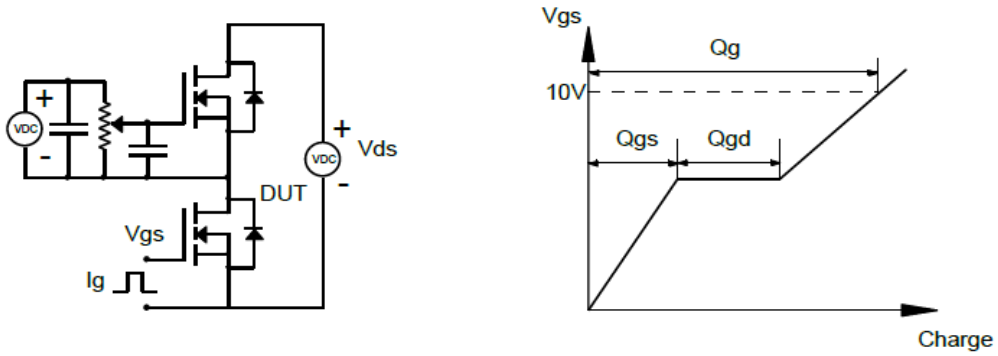


Figure1: Gate Charge Test Circuit & Waveforms

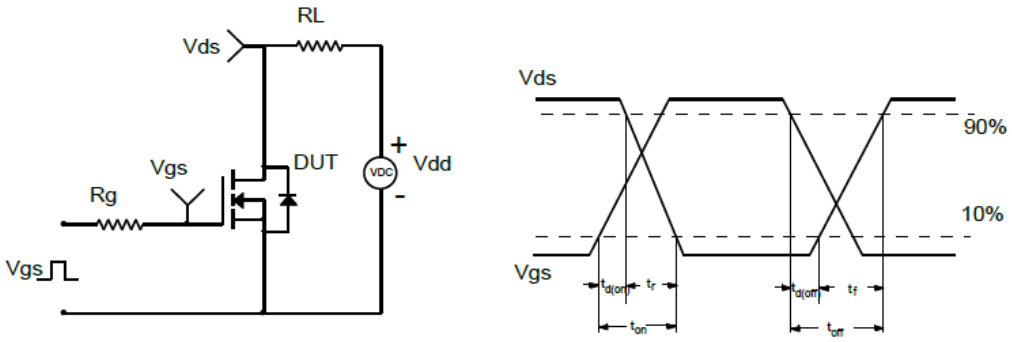


Figure2: Resistive Switching Test Circuit & Waveforms

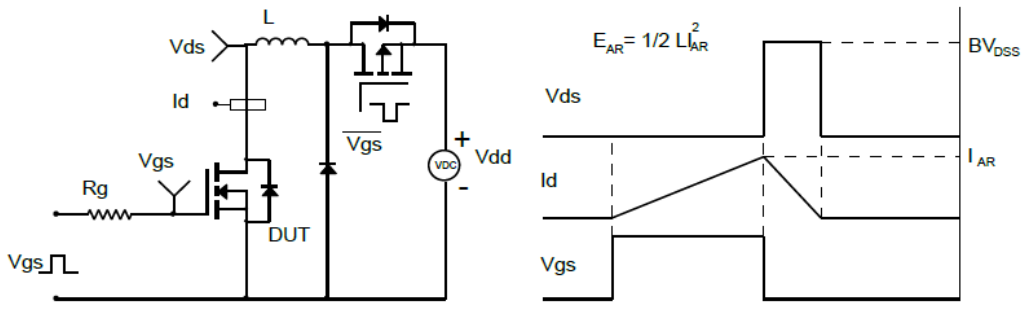


Figure3: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

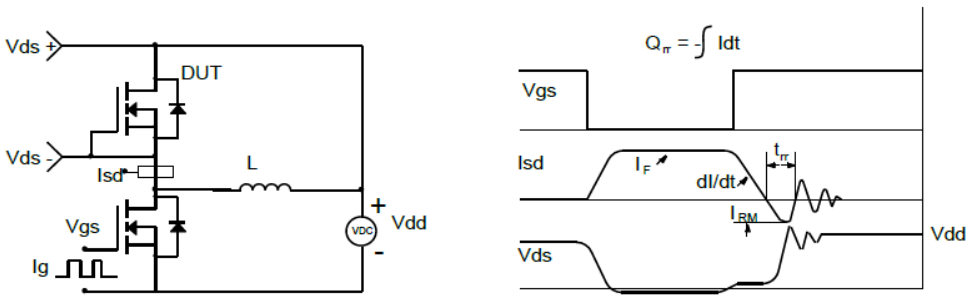
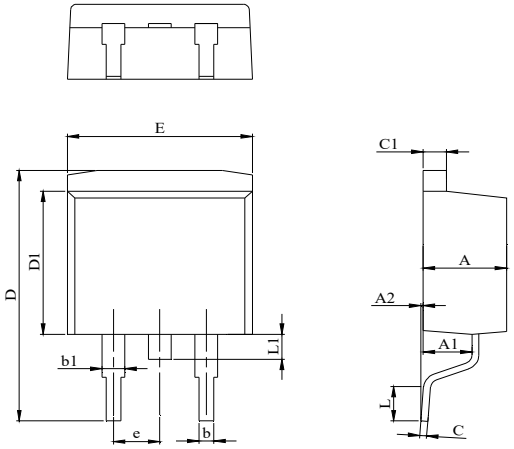


Figure4: Diode Recovery Test Circuit & Waveforms

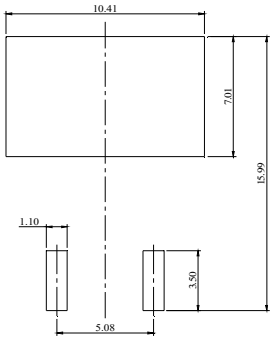
TO-263 Package Information

Package Outline



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.24		4.77
A1	2.30		2.89
A2	0.00	0.10	0.25
b	0.70		0.96
b1	1.17		1.70
C	0.30		0.60
C1	1.15		1.42
D	14.10		15.88
D1	8.50		9.60
E	9.78		10.36
L	1.78		2.79
L1			1.75
e		2.54	

Recommend Soldering Footprint



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