General Features

- Low On-Resistance
- 100% avalanche tested
- Fast Switching Speed
- Excellent package for good heat dissipation

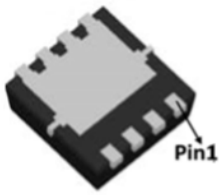
Application

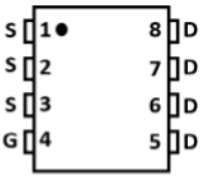
- DC/DC Converters
- On board power for server
- Synchronous rectification

Product Summary

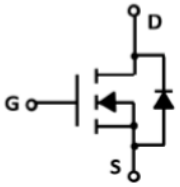
RoHs

V_{DS}	40	V
$R_{DS(on),Typ}$@ V_{GS}=10 V	6.0	mΩ
I_D	40	A





DFN3.3*3.3-8



Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	40	A
		T_C = 100℃	32	A
I_{DM}	Pulsed Drain Current note1		160	A
EAS	Single Pulsed Avalanche Energy		50	mJ
P_D	Power Dissipation	T_C = 25℃	65	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.92	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	LIMITS			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V, V_{GS}=0V	---	---	1	μA
		T_J=125°C	---	---	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.1	1.6	2.4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$ ①	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=20A	---	7.5	12	mΩ
		V_{GS}=10V, I_{DS}=30A	---	6.0	8.5	mΩ
Diode Characteristics						
V_{SD} ①	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=20A, dI_{SD}/dt=100A/μs	---	14	---	ns
Q_{rr}	Reverse Recovery Charge		---	32	---	nC
Dynamic Characteristics ②						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	---	1.2	---	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=20V, Frequency=1.0MHz	---	1733	---	pF
C_{oss}	Output Capacitance		---	283	---	
C_{rss}	Reverse Transfer Capacitance		---	141	---	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=20V,I_{DS}=20A, V_{GEN}=10V,R_G=4.7Ω	---	6	---	ns
t_r	Turn-on Rise Time		---	10	---	
$t_{d(OFF)}$	Turn-off Delay Time		---	24	---	
t_f	Turn-off Fall Time		---	5	---	
Gate Charge Characteristics ②						
Q_g	Total Gate Charge	V_{DS}=32V, V_{GS}=10V, I_{DS}=20A	---	18	23	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	5	---	

Notes:

①Pulse test;Pulse width≤300μs, duty cycle≤2%.

②Guaranteed by design, not subject to production testing.

Test Circuit

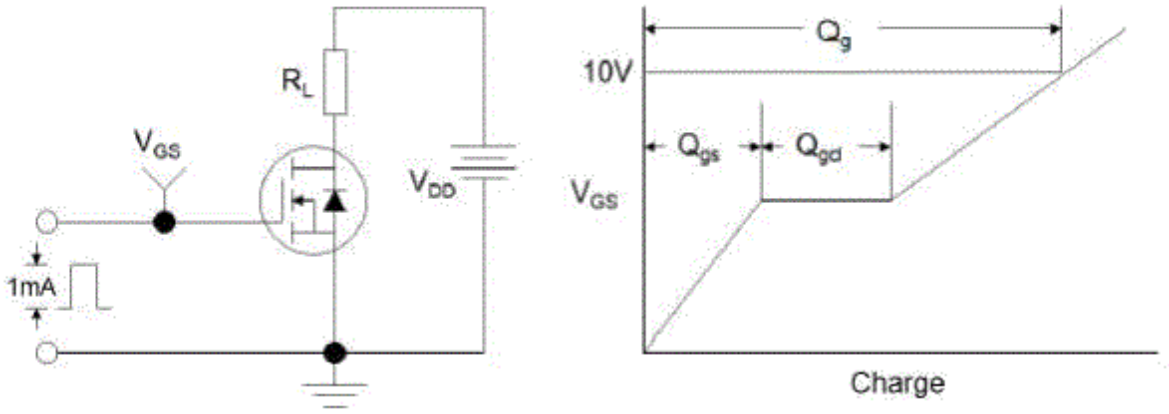


Figure1:Gate Charge Test Circuit & Waveform

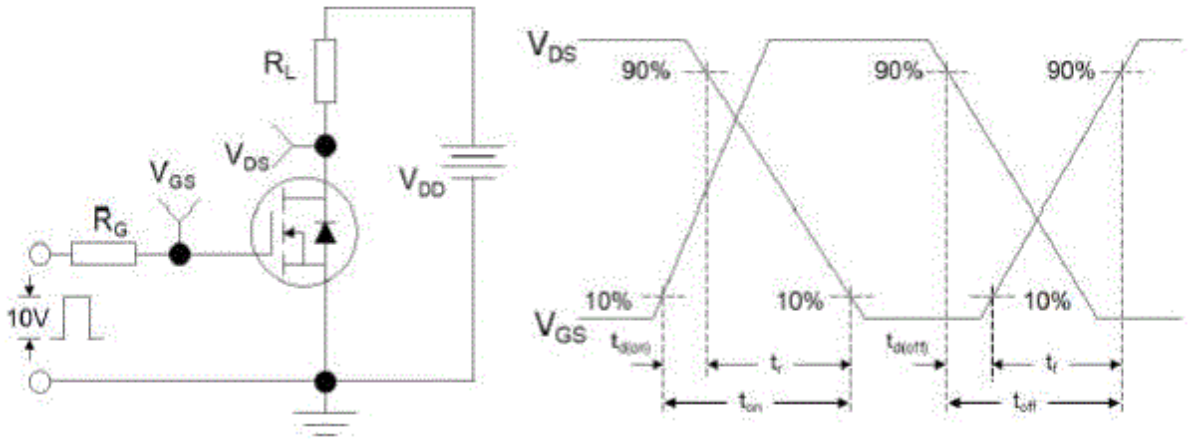


Figure 2: Resistive Switching Test Circuit & Waveforms

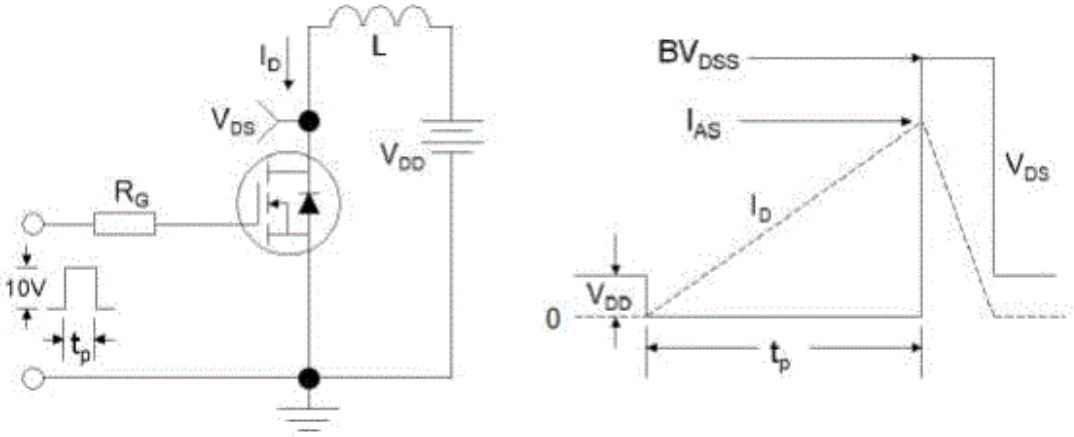
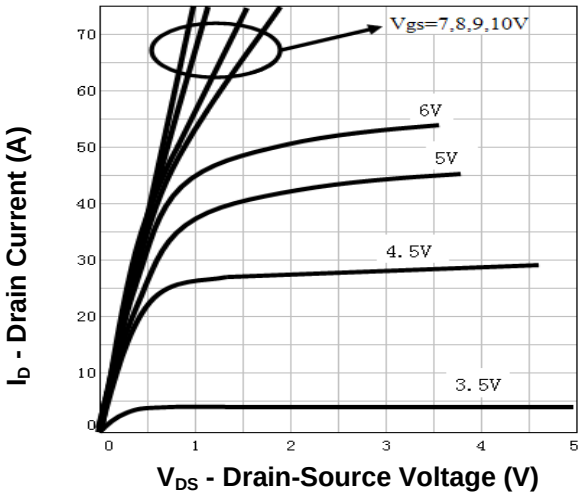
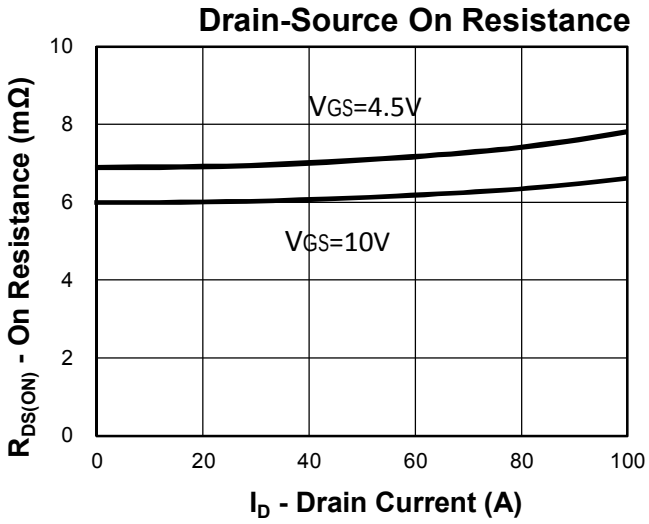
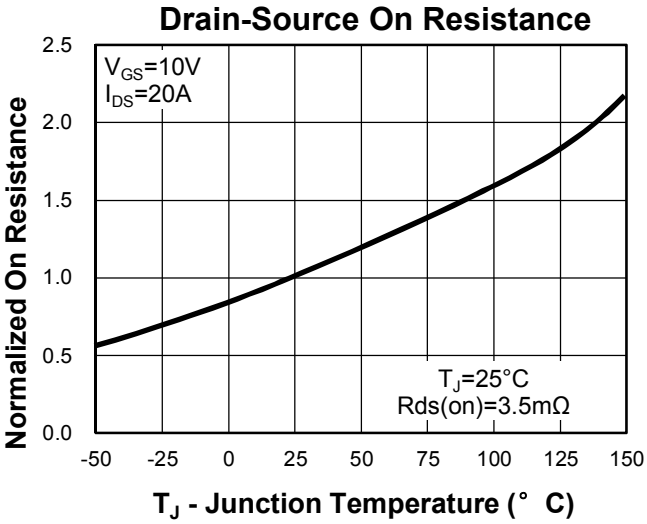


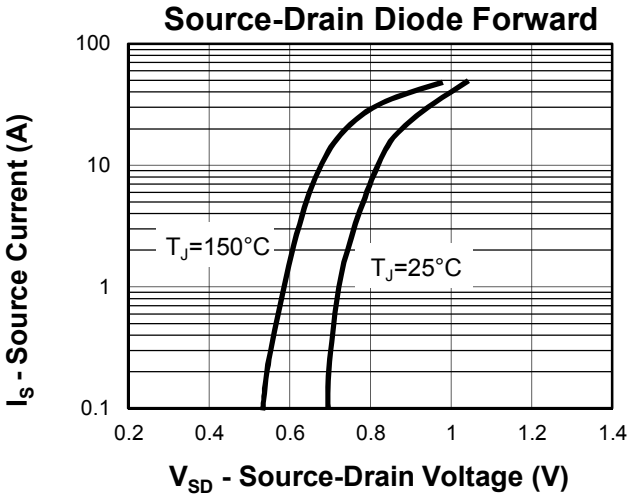
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

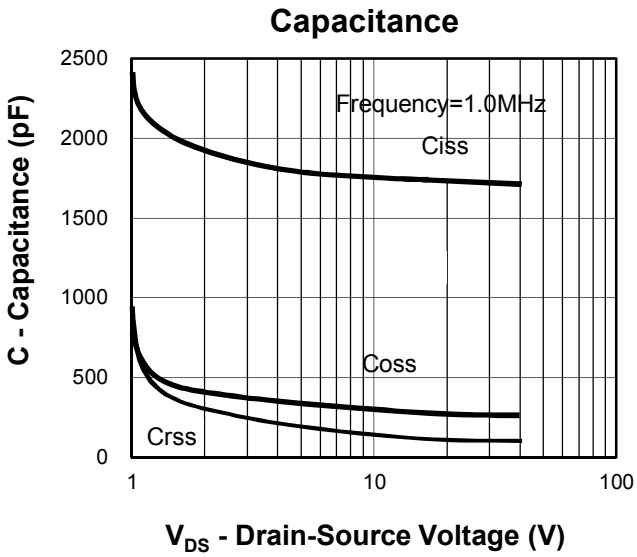
Typical Electrical and Thermal Characteristics (Curves)

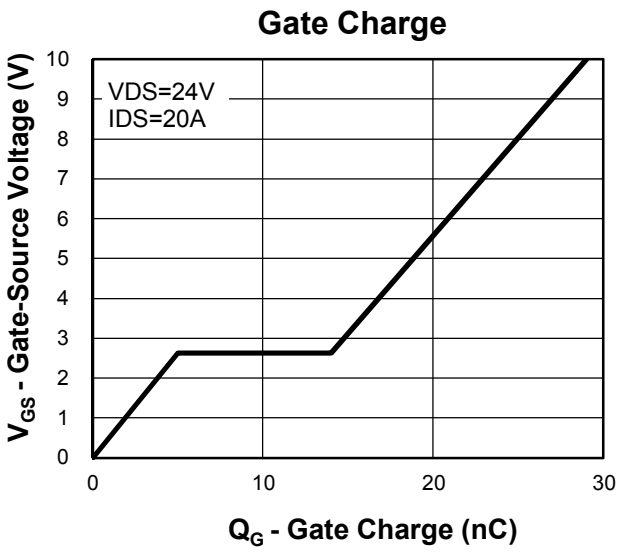




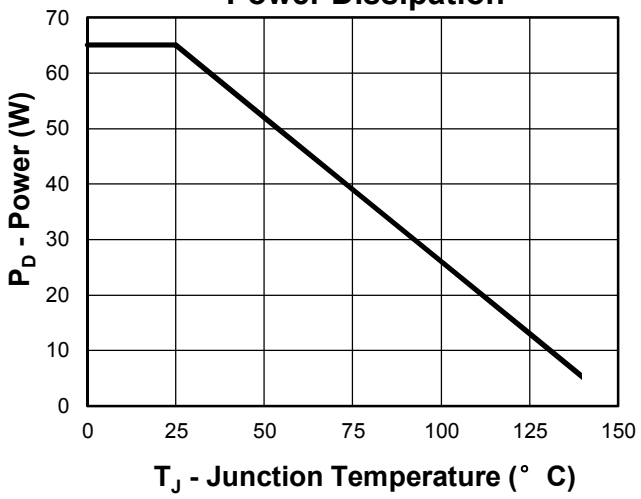




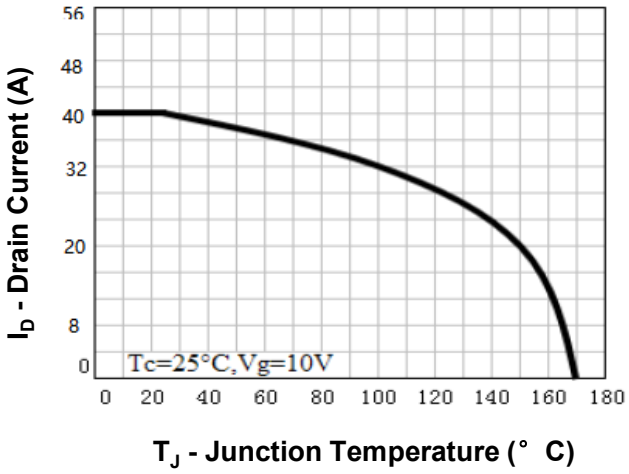




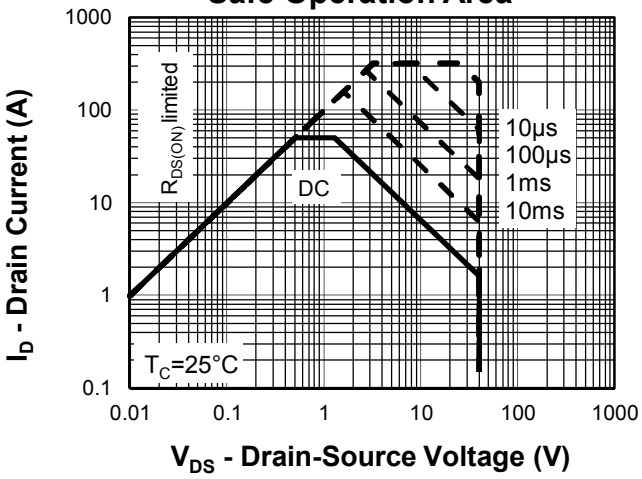
Power Dissipation



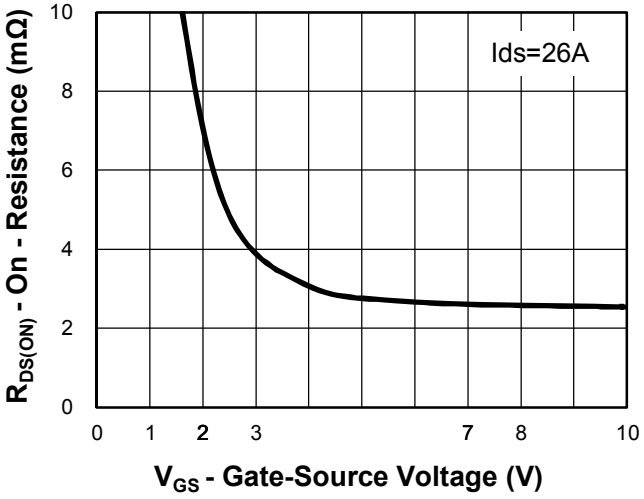
Drain Current



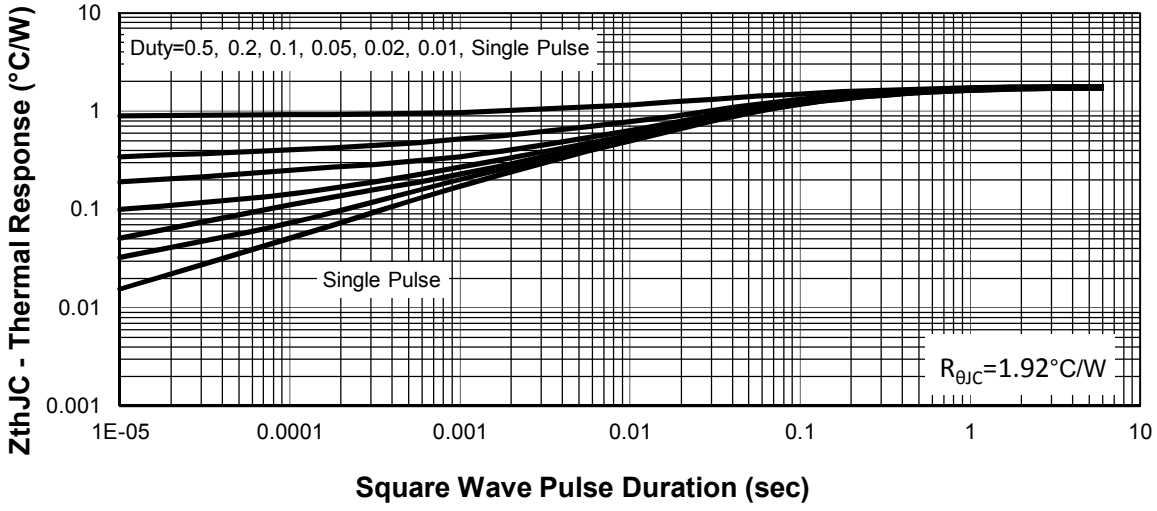
Safe Operation Area



Drain Current

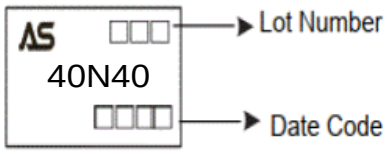


Thermal Transient Impedance

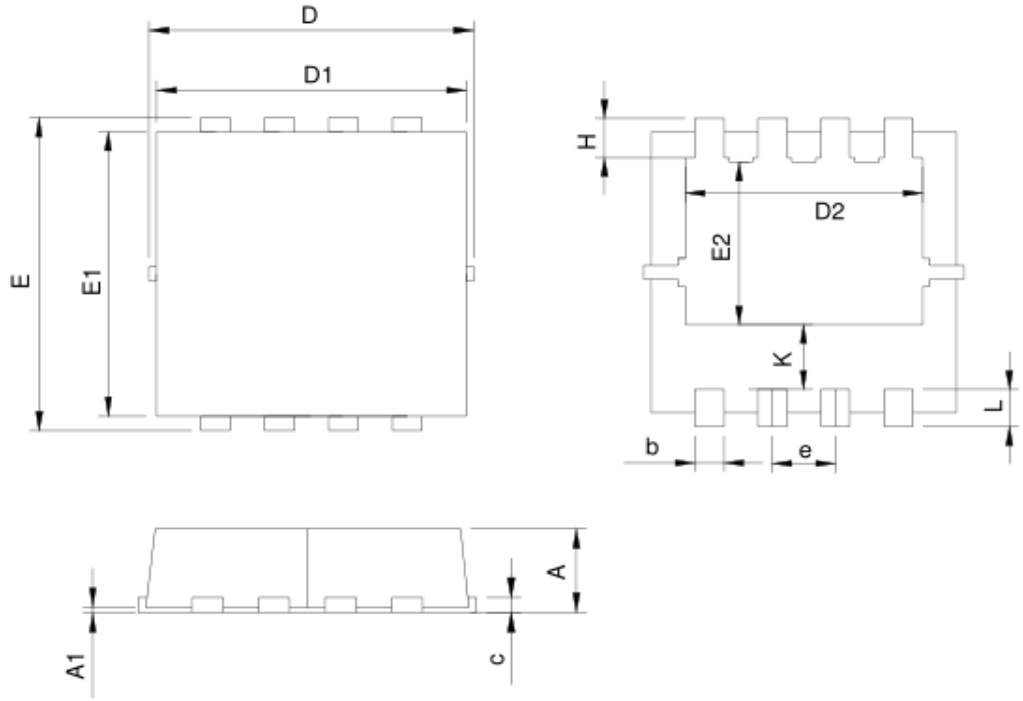


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N40E-R	40N40	DFN3.3*3.3-8	Tape&Reel	5000/Reel

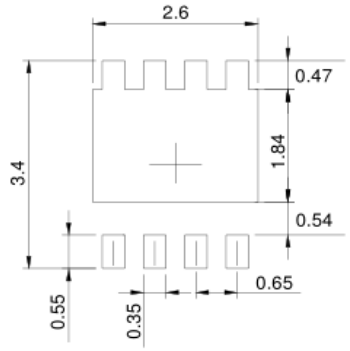
PACKAGE	MARKING
DFN3.3x3.3-8	

Dimensions(DFN3.3×3.3-8)



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm

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