

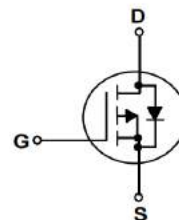
Features

- P-Channel
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

V_{DS}	-20	V
$R_{DS(on),TYP@ V_{GS}=-4.5 V}$	2.2	m Ω
$R_{DS(on),TYP@ V_{GS}=-2.5 V}$	3.3	m Ω
I_D	-80	A

DNF5x6


Part ID	Package Type	Marking	Packing
ZT020P02G	DNF5x6	ZT020P02G	5000pcs/reel



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage	± 10	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-20	V	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_C = 25^\circ\text{C}$ -320	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_C = 25^\circ\text{C}$	-80	A
		$T_C = 100^\circ\text{C}$	-49.5	A
P_D	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	130	W
	Derating factor		1.04	W/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case (Note 2)		0.96	$^\circ\text{C}/\text{W}$

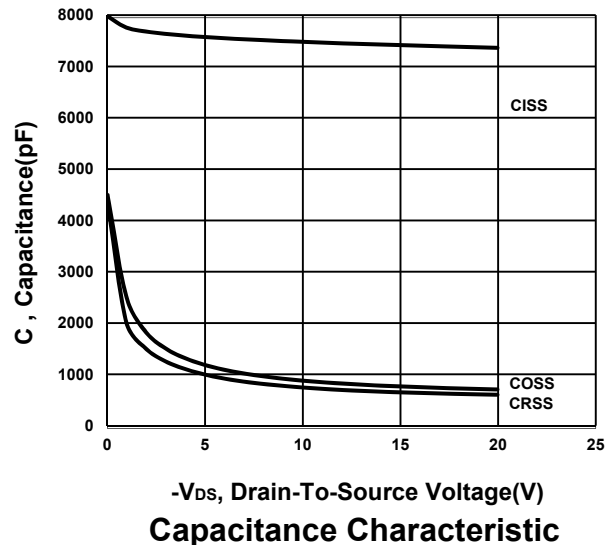
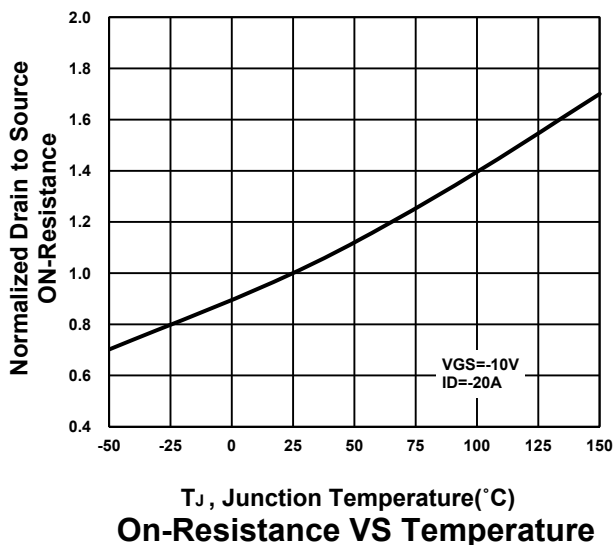
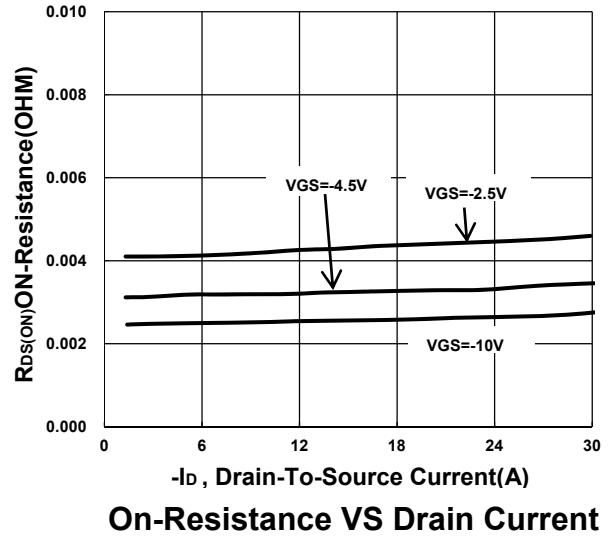
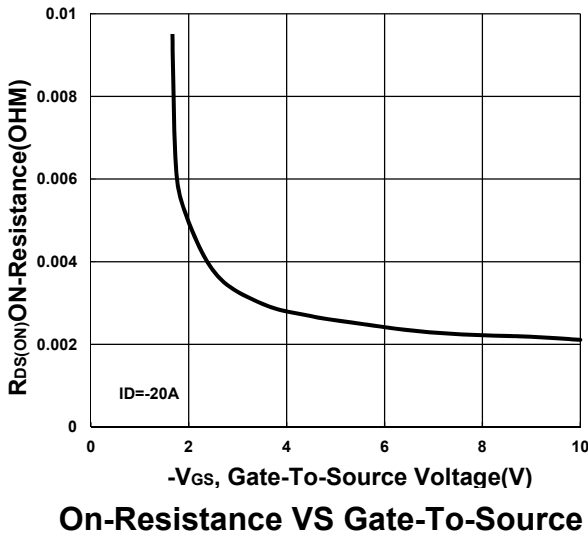
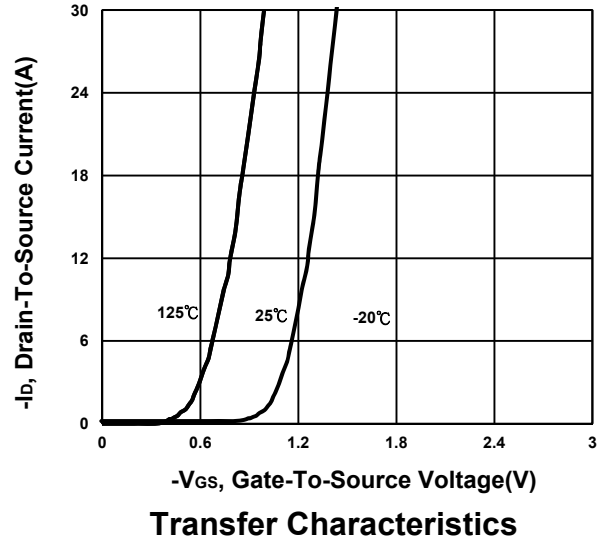
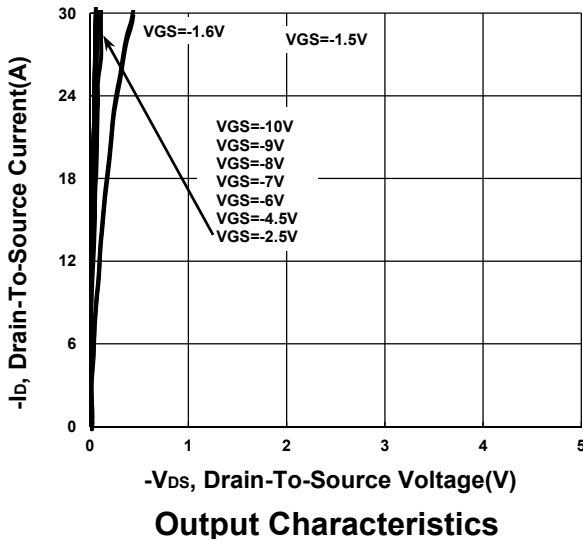
Electrical Characteristics $T_J=25$ unless otherwise noted

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ $T_J=25^\circ\text{C}$ (unless otherwise stated)						
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$	--	--	-1	μA
IGSS	Gate-Body Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$	--	--	± 100	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.6	-1.0	V
RDS(on)	Drain-Source On-State Resistance	$V_{GS}=-4.5V, I_D=-20A$	--	2.2	3.3	m Ω
RDS(on)	Drain-Source On-State Resistance	$V_{GS}=-2.5V, I_D=-20A$	--	3.3	4.5	m Ω
gFS	Forward Transconductance	$V_{DS}=-5V, I_D=-20A$	100	--	--	S
Dynamic Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise stated) (Note 4)						
Ciss	Input Capacitance	$V_{DS}=-10V, V_{GS}=0V,$ $f=1\text{MHz}$	--	7990	--	pF
Coss	Output Capacitance		--	890	--	pF
Crss	Reverse Transfer Capacitance		--	760	--	pF
Qg	Total Gate Charge	$V_{DD}=-10V, I_D=-20A,$ $V_{GS}=-10V$	--	153	--	nC
Qgs	Gate-Source Charge		--	6.1	--	nC
Qgd	Gate-Drain Charge		--	21	--	nC
Switching Characteristics (Note 4)						
Td(on)	Turn-on Delay Time	$V_{DD}=-10V,$ $R_L=0.5\Omega,$ $R_G=6\Omega,$ $V_{GS}=-10V$	--	13	--	ns
Tr	Turn-on Rise Time		--	12	--	ns
Td(off)	Turn-Off Delay Time		--	350	--	ns
Tf	Turn-Off Fall Time		--	136	--	ns
Source- Drain Diode Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise stated)						
ISD	Source-Drain Current (Body Diode) (Note 2)		--	--	-80	A
VSD	Forward on voltage (Note 3)	$I_S=-20A, V_{GS}=0V$	--	--	-1.3	V
Trr	Reverse Recovery Time	$T_J=25, I_F=-20A,$ $V_{GS}=0V$	--	75	--	ns
Qrr	Reverse Recovery Charge	$di/dt=100A/\mu s$	--	61	--	nC

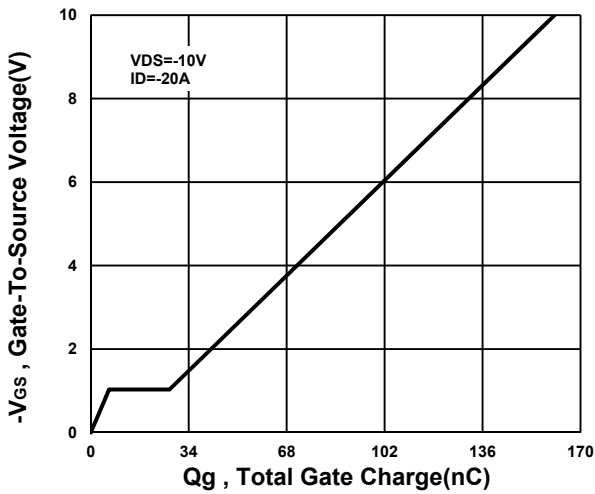
Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

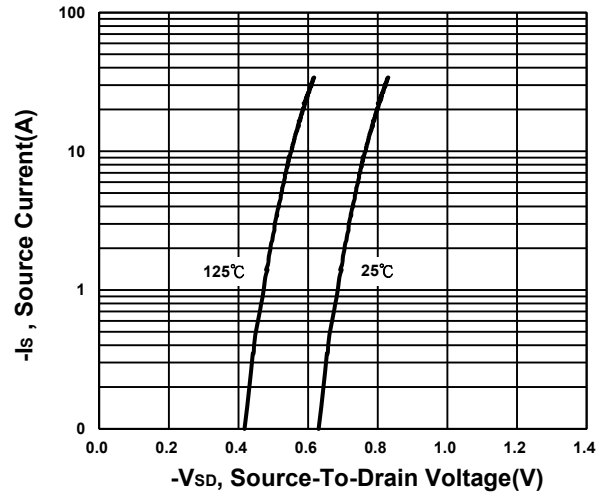
Typical Electrical And Thermal Characteristics (Curves)



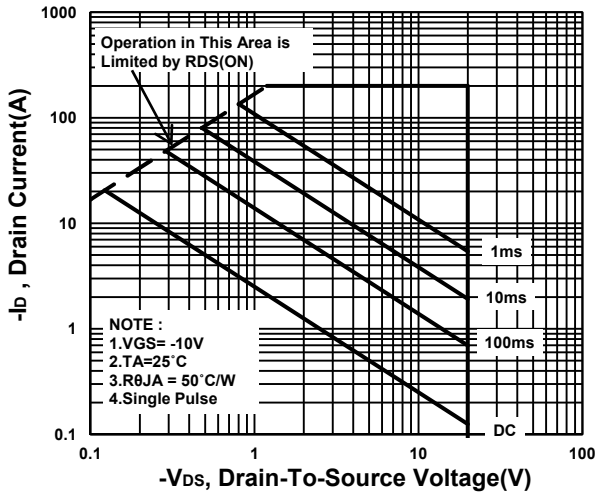
Typical Electrical And Thermal Characteristics (Curves)



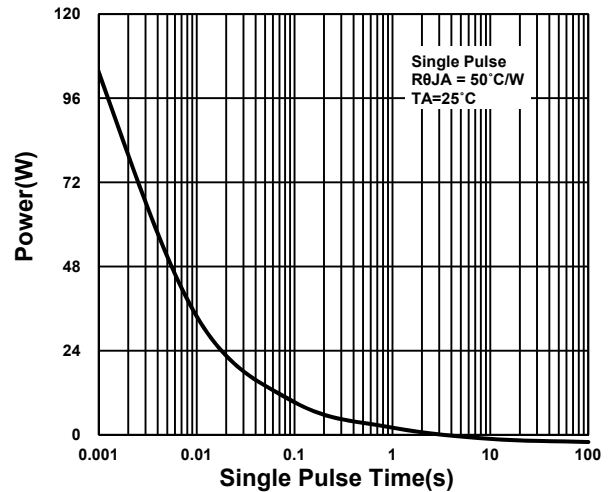
Gate charge Characteristics



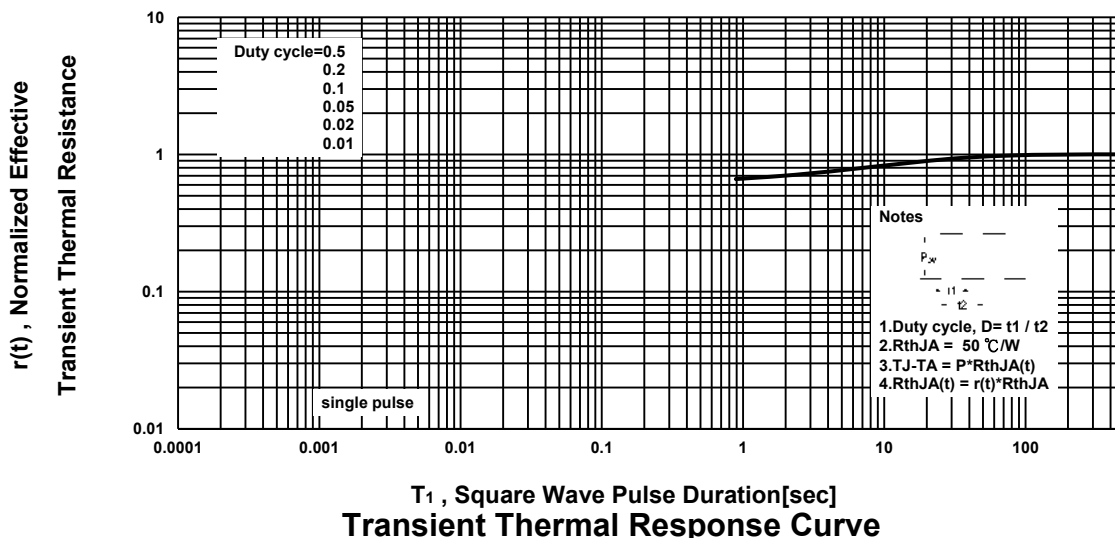
Source-Drain Diode Forward Voltage



Safe Operating Area



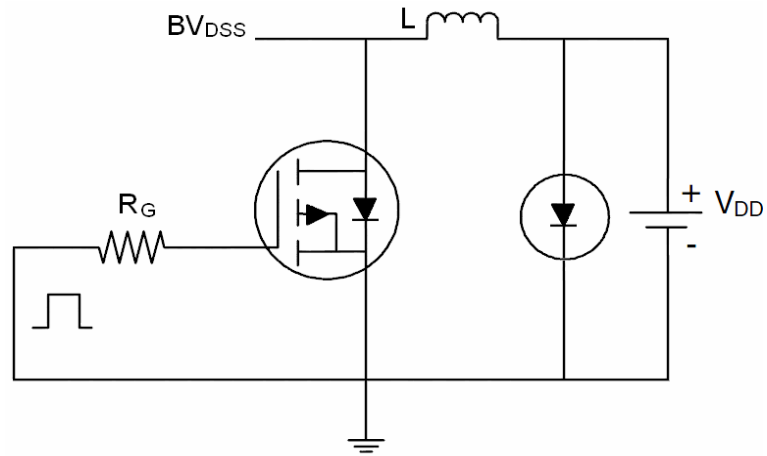
Single Pulse Maximum Power Dissipation



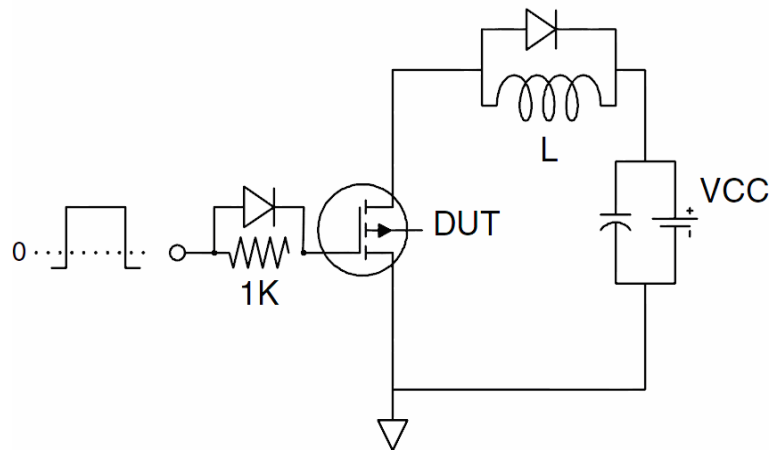
Transient Thermal Response Curve

Test Circuit

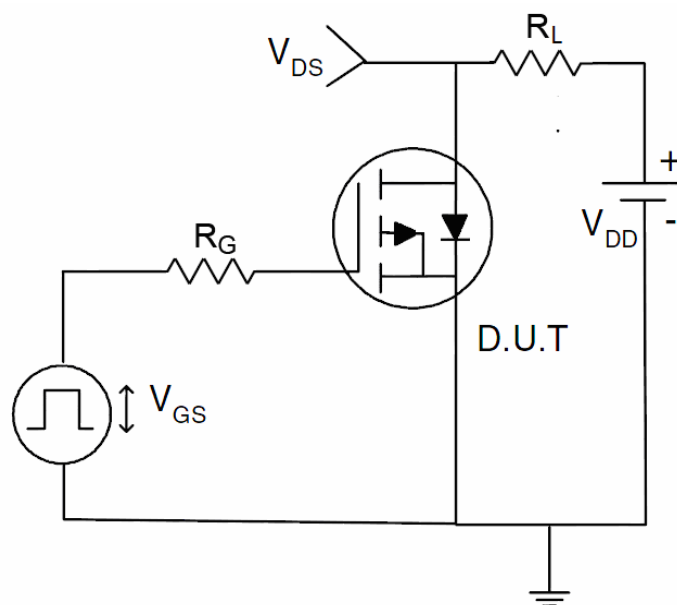
1) E_{AS} Test Circuit



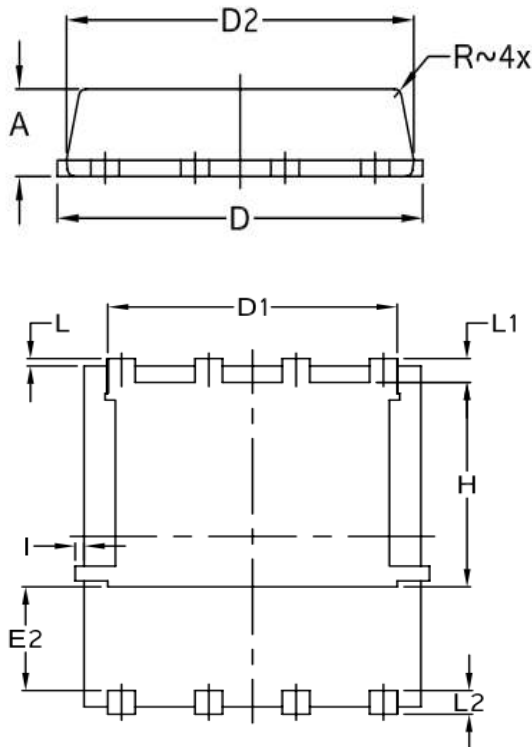
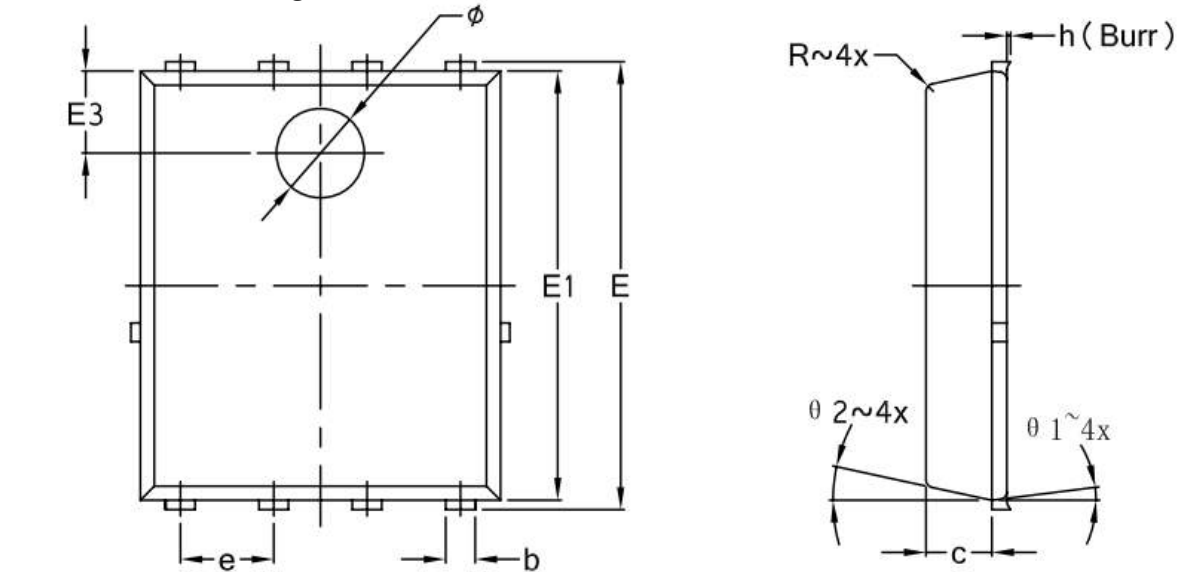
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



DFN5x6-8L Package Information



SYMBOL	COMMON			
	MM		INCH	
	MIN.	MAX.	MIN.	MAX.
A	1.03	1.17	0.0406	0.0461
b	0.35	0.46	0.0138	0.0181
c	0.84	0.95	0.0331	0.0374
D	4.83	5.37	0.1902	0.2114
D1	4.14	4.28	0.1630	0.1685
D2	4.83	4.97	0.1902	0.1957
E	6.03	6.13	0.2374	0.2413
E1	5.68	5.82	0.2236	0.2291
E2	1.65	—	0.0650	—
E3	1.03	1.17	0.0406	0.0461
e	1.27 BSC		0.0500 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.40	0.48	0.0157	0.0189
L2	0.40	0.48	0.0157	0.0189
H	3.315	3.475	0.1305	0.1368
I	—	0.16	—	0.0063
phi	1.13	1.27	0.0445	0.0500
R	0.10		0.0039	
theta 1	7° REF		7° REF	
theta 2	12° REF		12° REF	
h	0.08 MAX		0.0031	

Customer Service

Sales and Service:

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