

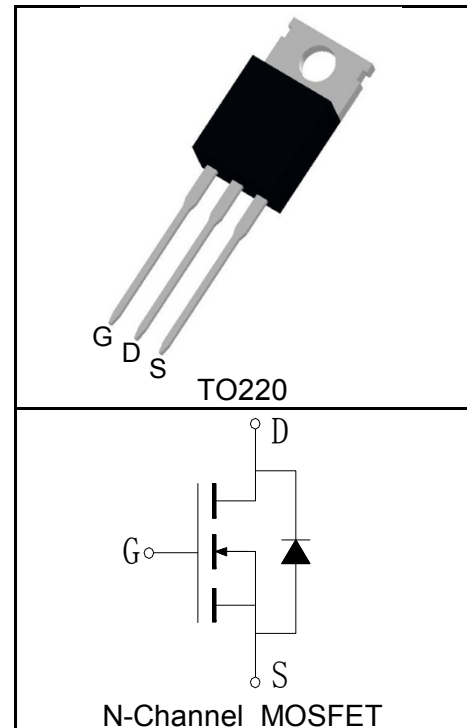
Features

- 120V/200A,
 $R_{DS(ON)} = 5.8m\Omega(Typ.)@V_{GS}=10V$
- Reliable and Rugged
- Ultra Low On-Resistance
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Uninterruptible Power Supplies
- Synchronous Rectification in DC/DC and AC/DC Converters

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		120	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	200	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	760	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	200	A
		T _C =100°C	140	
P _D	Maximum Power Dissipation	T _C =25°C	394	W
		T _C =100°C	197	
R _{θJC}	Thermal Resistance-Junction to Case		0.38	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		900	mJ

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

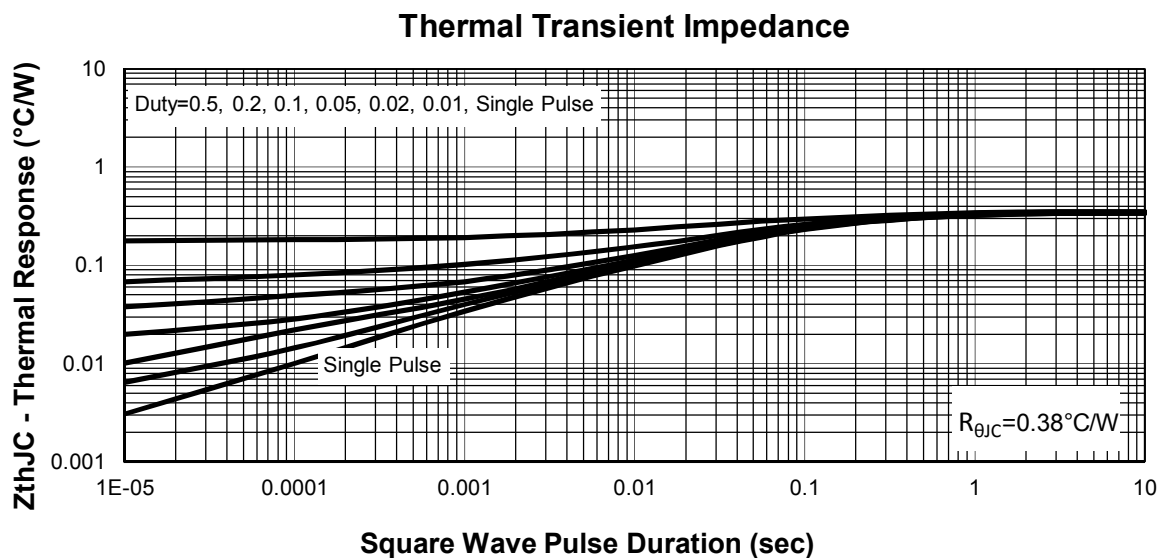
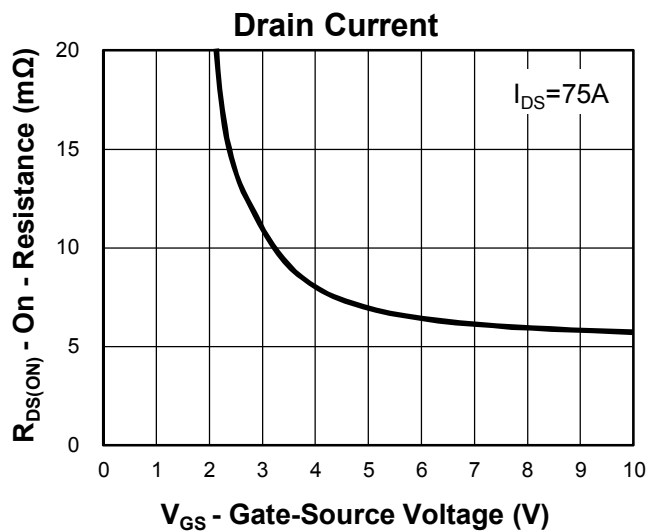
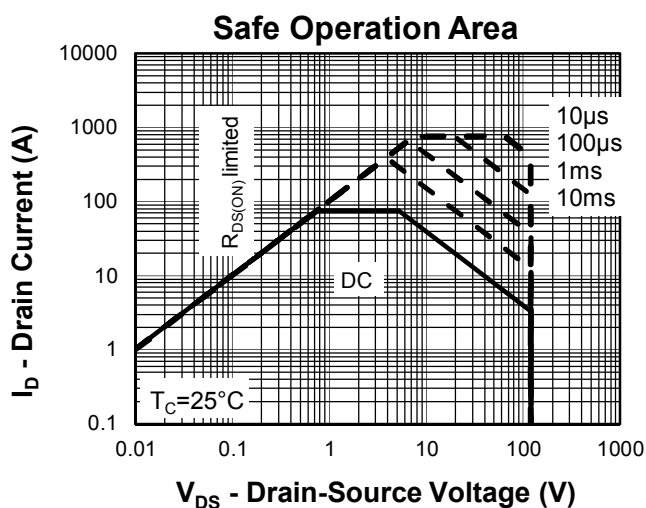
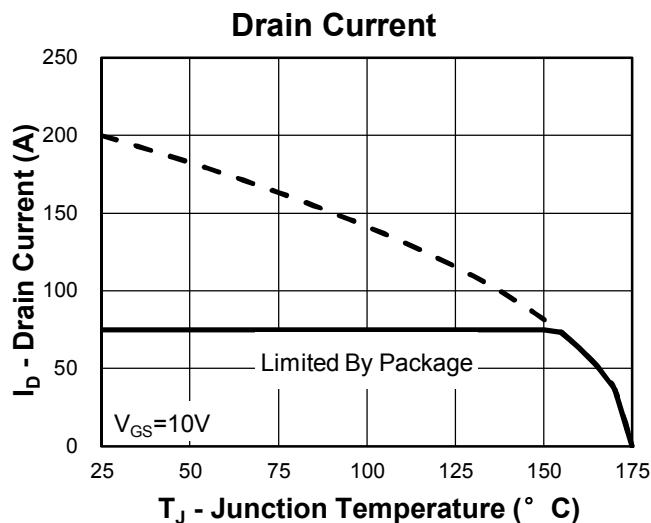
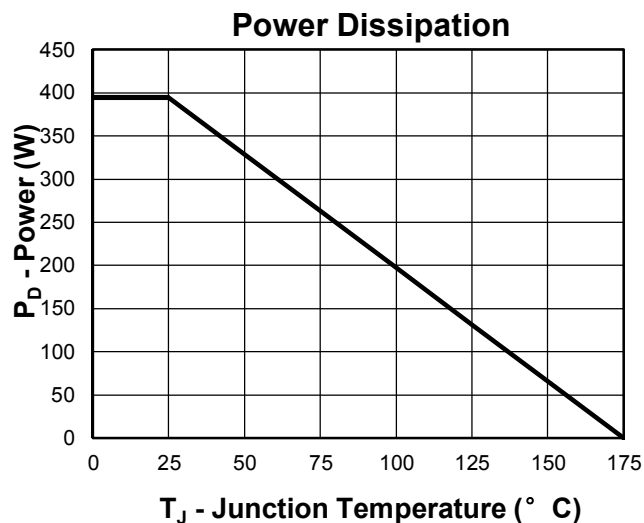
Symbol	Parameter	Test Condition	RU12200R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	120			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =120V, V _{GS} =0V			1	μA
			T _J =125°C		30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2		4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =75A		5.8	6.5	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =75A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		38		ns
Q _{rr}	Reverse Recovery Charge			386		nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.3		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =60V, Frequency=1.0MHz		8560		pF
C _{oss}	Output Capacitance			1460		
C _{rss}	Reverse Transfer Capacitance			980		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =60V, I _{DS} =75A, V _{GEN} =10V, R _G =2.5Ω		45		ns
t _r	Turn-on Rise Time			156		
t _{d(OFF)}	Turn-off Delay Time			203		
t _f	Turn-off Fall Time			73		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =96V, V _{GS} =10V, I _{DS} =20A		248		nC
Q _{gs}	Gate-Source Charge			33		
Q _{gd}	Gate-Drain Charge			188		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 75A.
 - ③ Limited by $T_{Jmax}, I_{AS}=60A, V_{DD}=48V, R_G=50\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

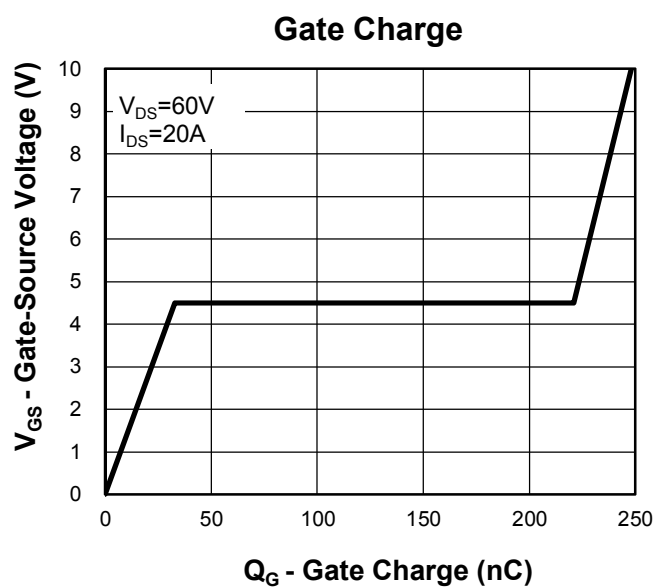
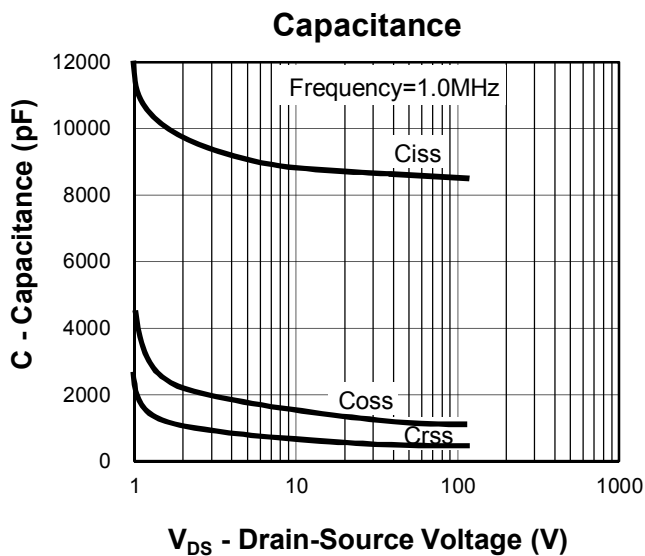
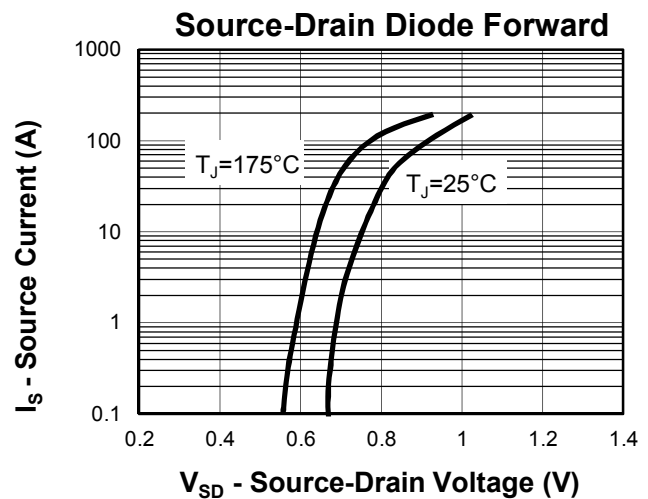
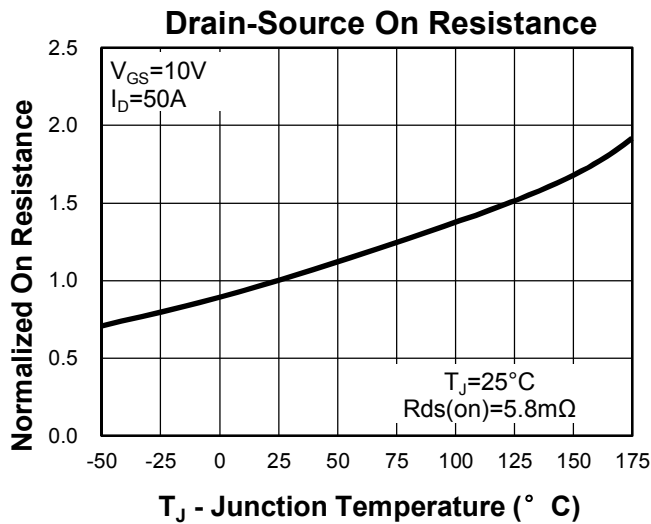
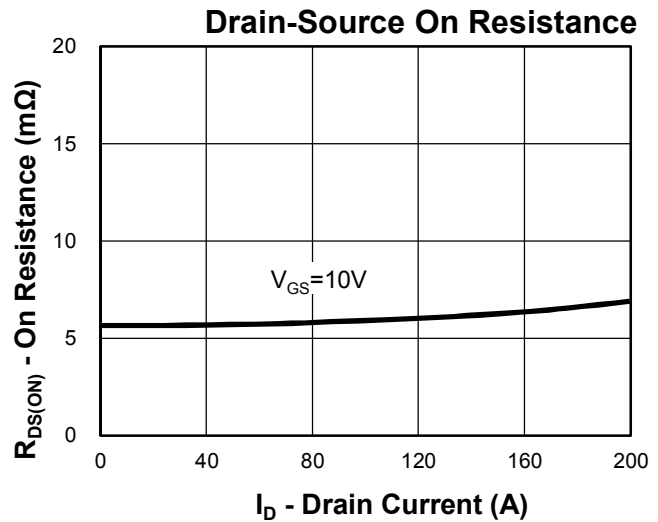
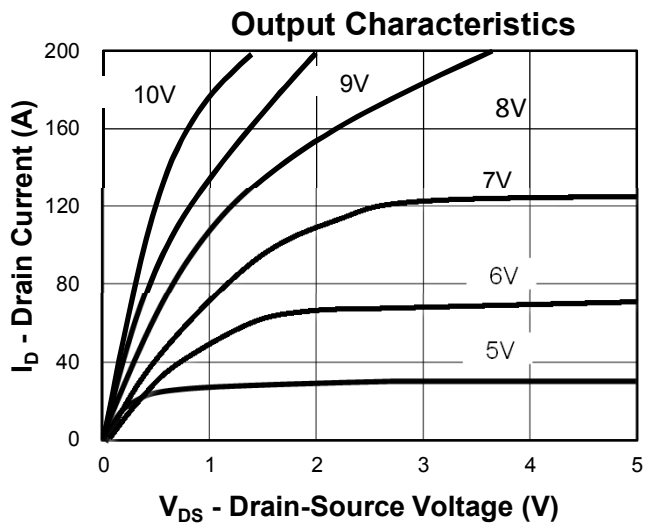
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU12200R	RU12200R	TO220	Tube	50	-	-

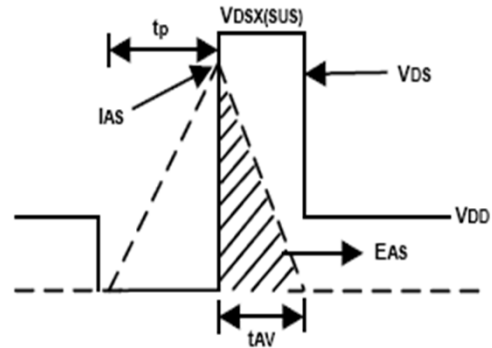
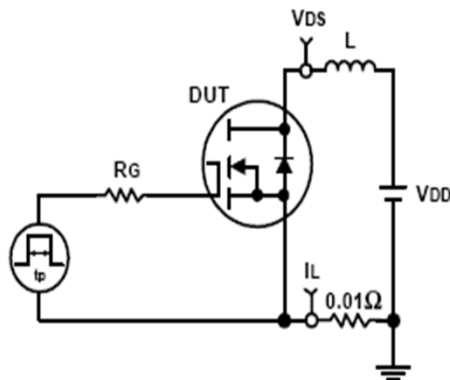
Typical Characteristics



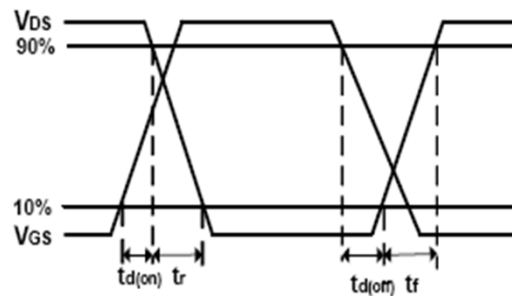
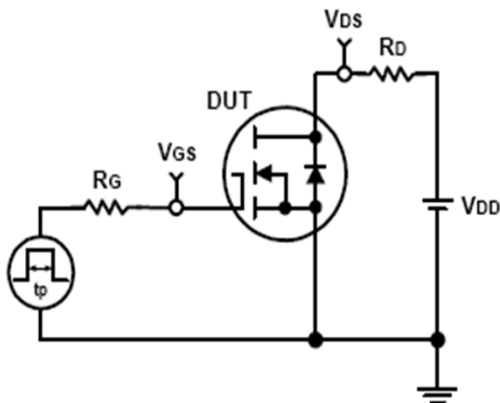
Typical Characteristics



Avalanche Test Circuit and Waveforms

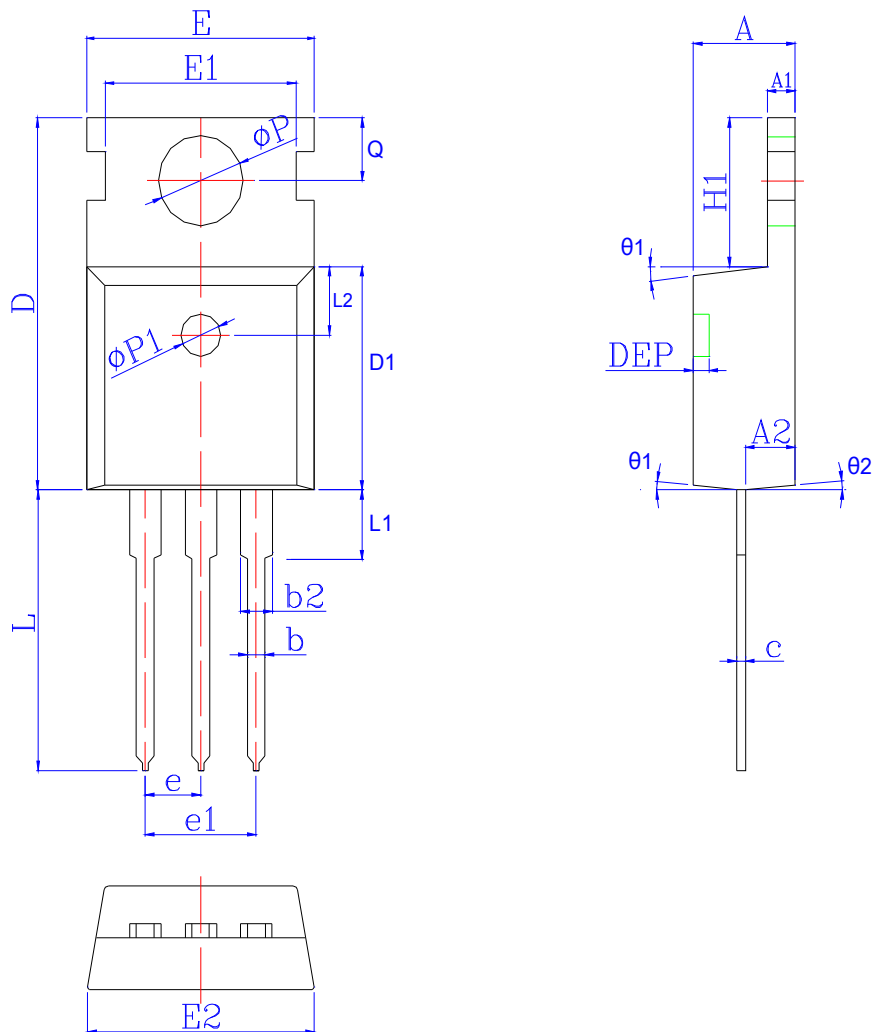


Switching Time Test Circuit and Waveforms



Package Information

TO220



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.54	4.77	0.169	0.179	0.188	Φp1	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.15	1.30	1.40	0.045	0.051	0.055	e	2.54 BSC			0.10 BSC		
A2	1.90	2.25	2.60	0.075	0.089	0.102	e1	5.08 BSC			0.20 BSC		
b	0.60	0.80	1.00	0.024	0.031	0.039	H1	6.30	6.50	6.80	0.248	0.256	0.268
b2	1.17	1.28	1.72	0.046	0.050	0.068	L	12.70	13.18	13.65	0.500	0.519	0.537
c	0.40	0.50	0.60	0.016	0.020	0.024	L1	*	*	3.95	*	*	0.156
D	15.40	15.70	16.00	0.606	0.618	0.630	L2	2.50 REF			0.098 REF		
D1	8.96	9.21	9.46	0.353	0.363	0.372	Φp	3.50	3.60	3.75	0.138	0.142	0.148
DEP	*	*	0.30	*	*	0.012	Q	2.70	2.80	3.20	0.106	0.110	0.126
E	9.66	9.97	10.28	0.380	0.393	0.405	θ 1	5°	7°	9°	5°	7°	9°
E1	*	8.70	*	*	0.343	*	θ 2	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.402							

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