

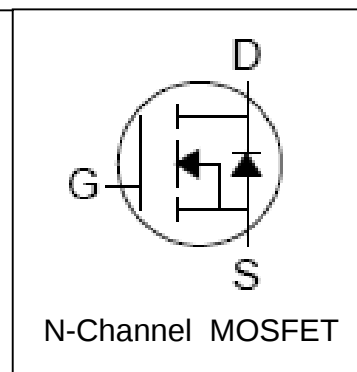
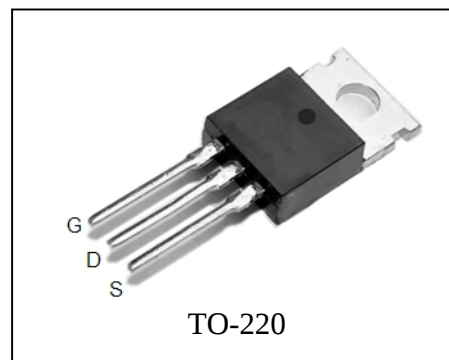
Features

- 100V/75A
 $R_{DS(ON)}=11m\Omega(Typ.) @ V_{GS}=10V$
- Ultra Low On-Resistance
- Extremely high dv/dt capability
- Fast Switching and Fully Avalanche Rated
- 100% avalanche tested

Applications

- High Speed Power Switching
- Uninterruptible Power Supply

Pin Description



Absolute Maximum Ratings

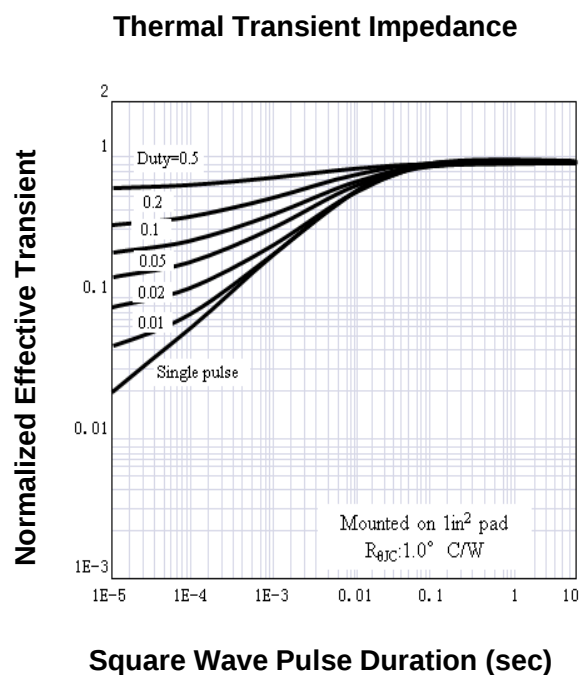
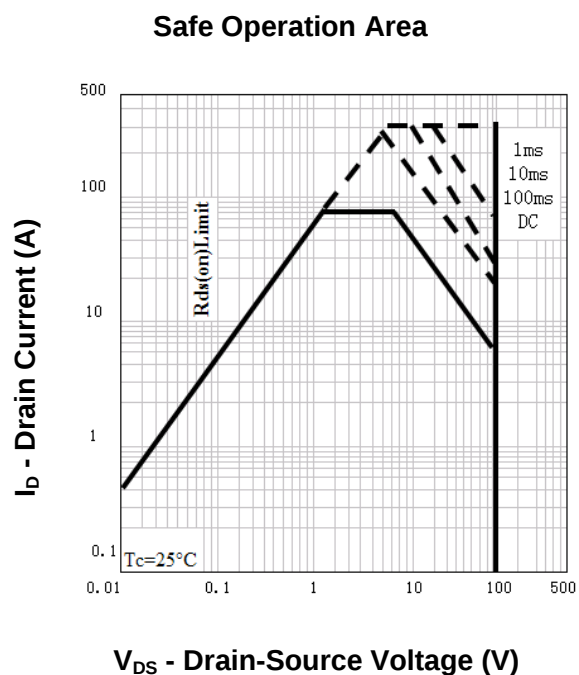
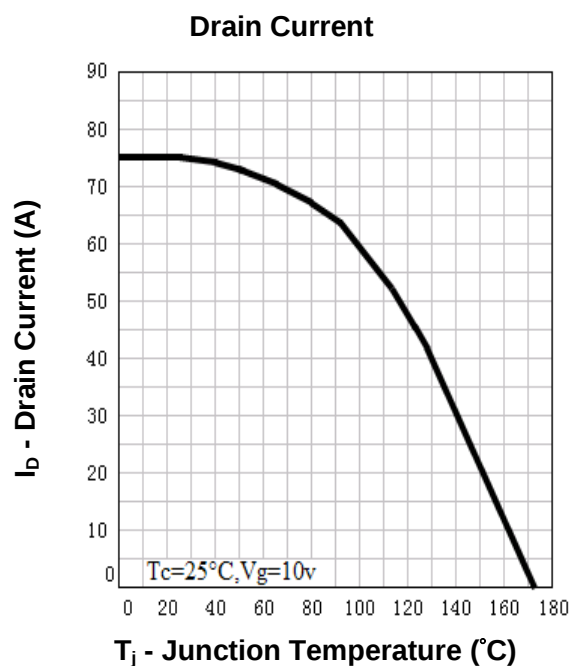
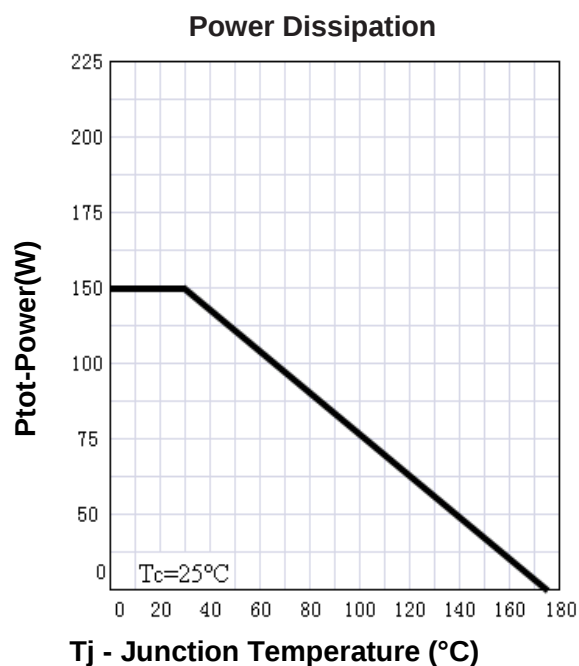
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	75 ^①	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulsed Drain Current Tested	T _C =25°C	300 ^②	A
I _D	Continue Drain Current(V _{GS} =10V)	T _C =25°C	75 ^①	
		T _C =100°C	59	
P _D	Maximum Power Dissipation	T _C =25°C	150	W
		T _C =100°C	75	
R _{θJC}	Thermal Resistance -Junction to Case		1.0	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy ,Single Pulsed		196	mJ

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

Symbol	Parameter	Test Condition	RU1H100R			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} =0V			1	μA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	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} =40A		11	15	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =40A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =40A, dl _{SD} /dt=100A/μs		36		ns
q _{rr}	Reverse Recovery Charge			46		nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.5		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} = 50V, Frequency=1.0MHz		3450		pF
C _{oss}	Output Capacitance			265		
C _{rss}	Reverse Transfer Capacitance			148		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, I _{DS} = 40A, V _{GEN} = 10V, R _G =5.6Ω		19		ns
t _r	Turn-on Rise Time			86		
t _{d(OFF)}	Turn-off Delay Time			55		
t _f	Turn-off Fall Time			69		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} = 10V, I _{DS} =40A		85		nC
Q _{gs}	Gate-Source Charge			20		
Q _{gd}	Gate-Drain Charge			35		

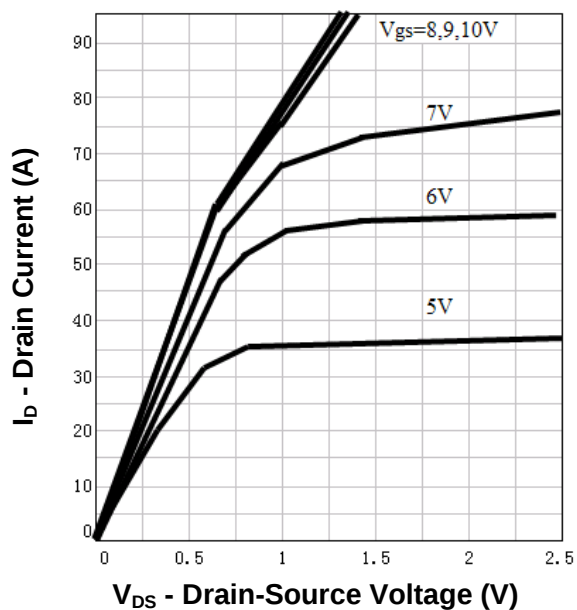
- Notes:
- ① Calculated continuous current based on maximum allowable junction temperature. Limited by bonding wire.
 - ② Pulse width limited by safe operating area.
 - ③ Limited by $T_{Jmax}, I_{AS}=28A, V_{DD}=48V, R_G=47\Omega$, Starting $T_J=25^{\circ}\text{C}$.
 - ④ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑤ Guaranteed by design, not subject to production testing.

Typical Characteristics

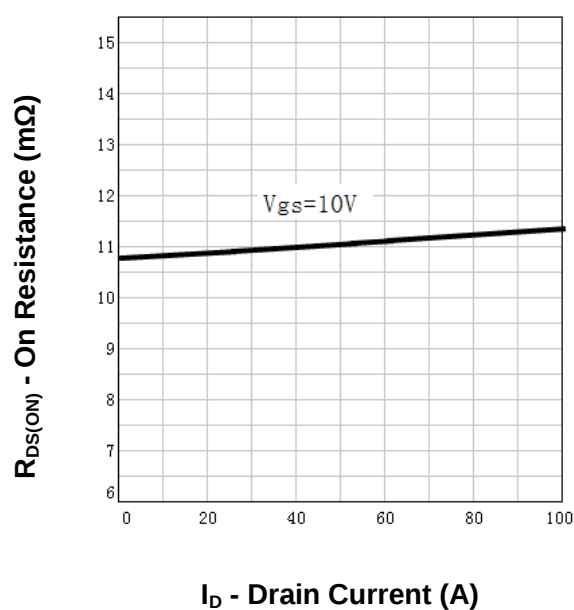


Typical Characteristics

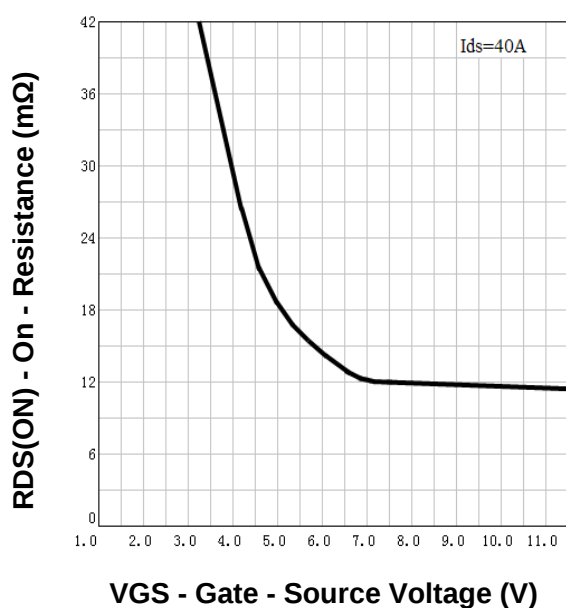
Output Characteristics



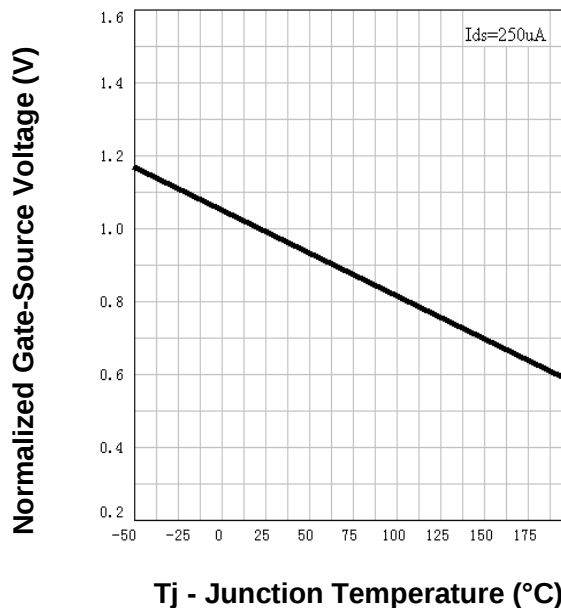
Drain-Source On Resistance



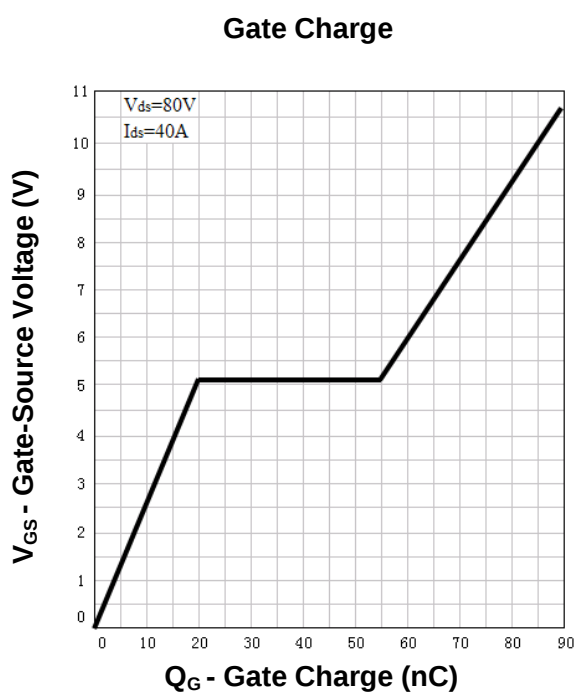
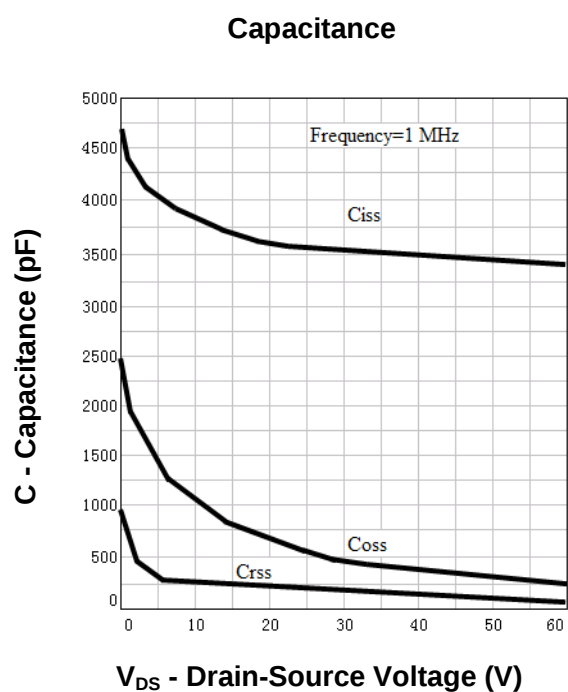
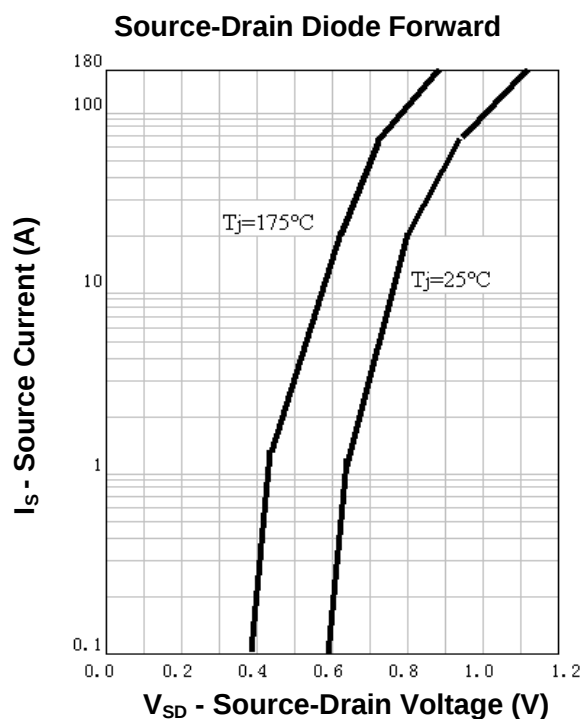
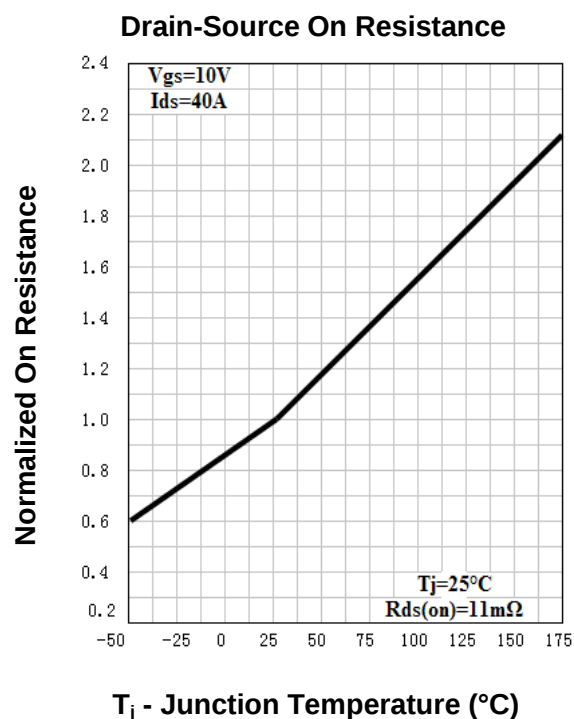
Drain-Source On Resistance



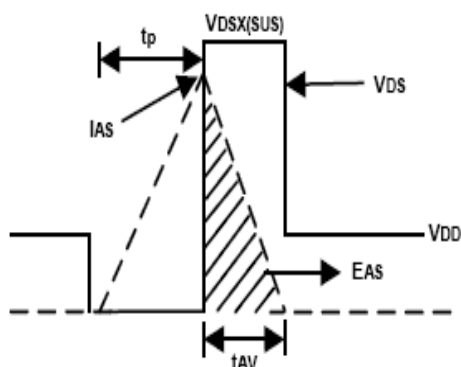
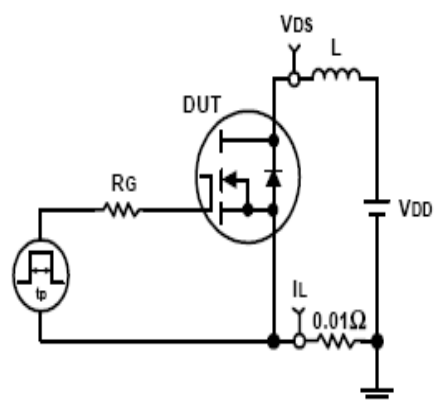
Normalized Gate Threshold Voltage



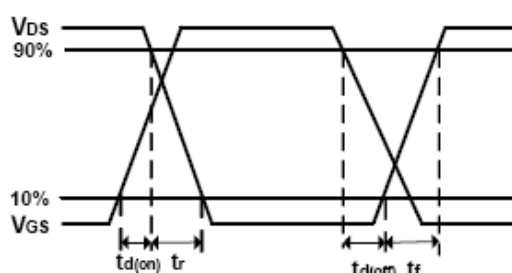
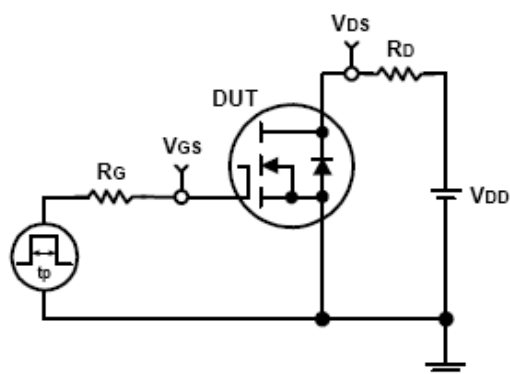
Typical Characteristics



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

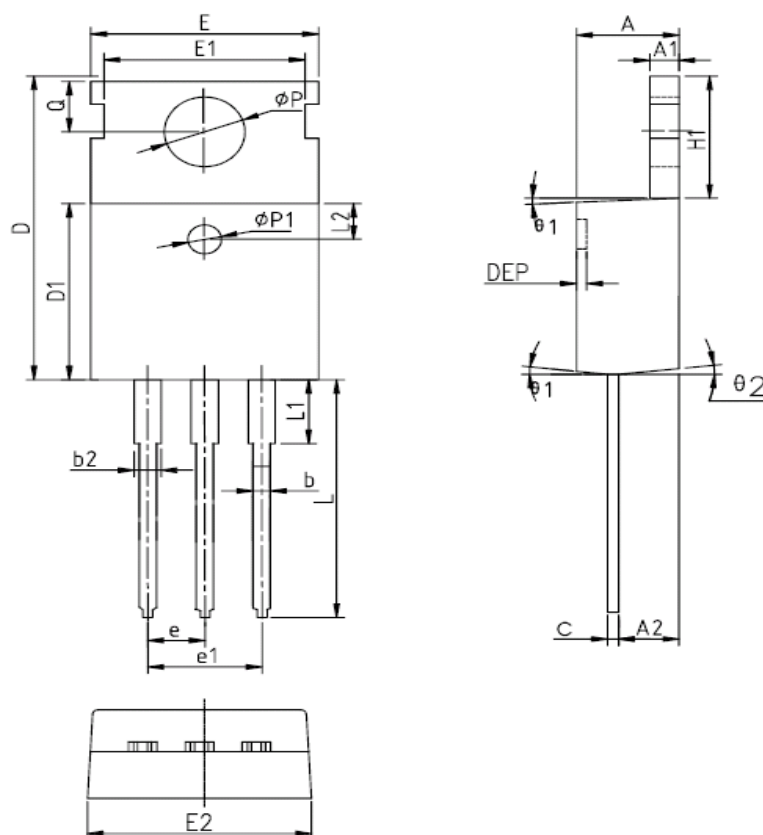


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1H100R	RU1H100R	TO-220	Tube	50	-	-

Package Information

TO-220FB-3L



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185	$\phi p1$	1.40	1.50	1.60	0.055	0.059	0.063
A1	1.27	1.30	1.33	0.050	0.051	0.052	e	2.54BSC			0.1BSC		
A2	2.35	2.40	2.50	0.093	0.094	0.098	e1	5.08BSC			0.2BSC		
b	0.77	-	0.90	0.030	-	0.035	H1	6.40	6.50	6.60	0.252	0.256	0.260
b2	1.23	-	1.36	0.048	-	0.054	L	12.75	-	13.17	0.502	-	0.519
C	0.48	0.50	0.52	0.019	0.020	0.021	L1	-	-	3.95	-	-	0.156
D	15.40	15.60	15.80	0.606	0.614	0.622	L2	2.50REF.			0.098REF.		
D1	9.00	9.10	9.20	0.354	0.358	0.362	ϕp	3.57	3.60	3.63	0.141	0.142	0.143
DEP	0.05	0.10	0.20	0.002	0.004	0.008	Q	2.73	2.80	2.87	0.107	0.110	0.113
E	9.70	9.90	10.10	0.382	0.389	0.398	$\theta 1$	5°	7°	9°	5°	7°	9°
E1	-	8.70	-	-	0.343	-	$\theta 2$	1°	3°	5°	1°	3°	5°
E2	9.80	10.00	10.20	0.386	0.394	0.401							

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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