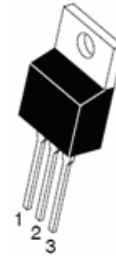
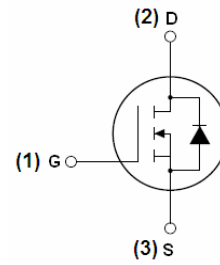


FEATURES

- $V_{DS} = 60V, I_D = 50A$
 $R_{DS(ON)} < 11m\Omega @ V_{GS} = 10V$
- High density cell design for ultra low Rdson
- Fully characterized Avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability



TO-220 top view

Application

- Power switching application
- Hard Switched and High Frequency Circuits
- Uninterruptible Power Supply

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	50	A
Drain Current-Continuous($T_C=100^\circ C$)	$I_D(100^\circ C)$	35	A
Pulsed Drain Current	I_{DM}	220	A
Maximum Power Dissipation	P_D	80	W
Derating factor		0.53	W/°C
Single pulse avalanche energy (Note 5)	E_{AS}	115	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Case (Note 2)	$R_{\theta JC}$	1.88	$^{\circ}\text{C/W}$
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Electrical Characteristics (TA=25 $^{\circ}\text{C}$ unless otherwise noted)

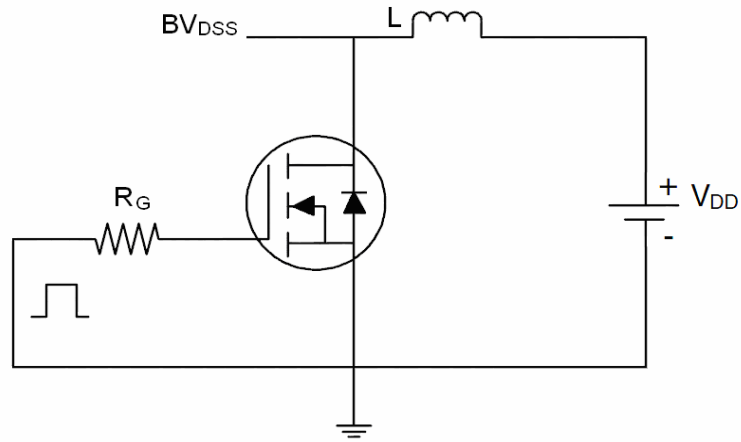
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60	71	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3	-	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	8.7	10.5	m Ω
	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=20A$		10.5	15	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=20A$	24	-	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0\text{MHz}$	-	1200	-	PF
Output Capacitance	C_{oss}		-	104	-	PF
Reverse Transfer Capacitance	C_{rss}		-	33	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=2A, R_L=15\Omega$ $V_{GS}=10V, R_G=2.5\Omega$	-	25	-	nS
Turn-on Rise Time	t_r		-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	nS
Turn-Off Fall Time	t_f		-	6	-	nS
Total Gate Charge	Q_g	$V_{DS}=30V, I_D=50A,$ $V_{GS}=10V$	-	30		nC
Gate-Source Charge	Q_{gs}		-	10		nC
Gate-Drain Charge	Q_{gd}		-	5		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=40A$	-		1.2	V
Diode Forward Current (Note 2)	I_S		-	-	50	A
Reverse Recovery Time	t_{rr}	$T_J=25^{\circ}\text{C}, I_F=40A$ $di/dt=100A/\mu s$ (Note 3)	-	50	-	nS
Reverse Recovery Charge	Q_{rr}		-	100	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

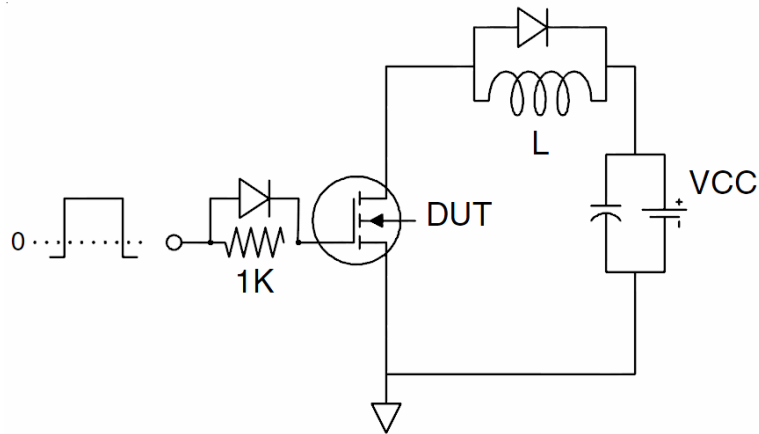
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS condition: $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_G=10V, L=0.5\text{mH}, R_G=25\Omega$

Test circuit

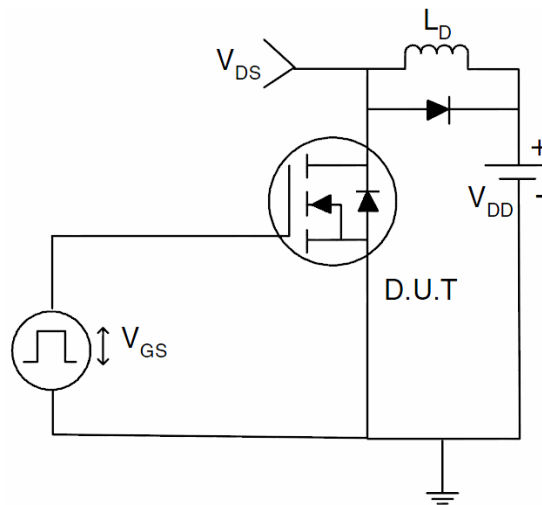
1) E_{AS} test Circuits



2) Gate charge test Circuit:



3) Switch Time Test Circuit:



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

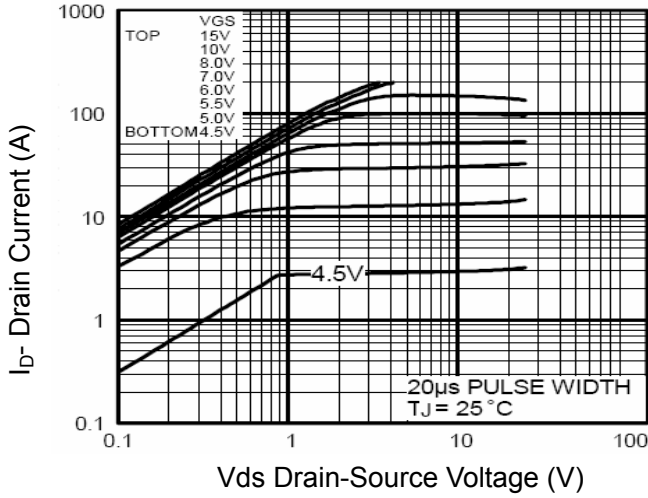


Figure 1 Output Characteristics

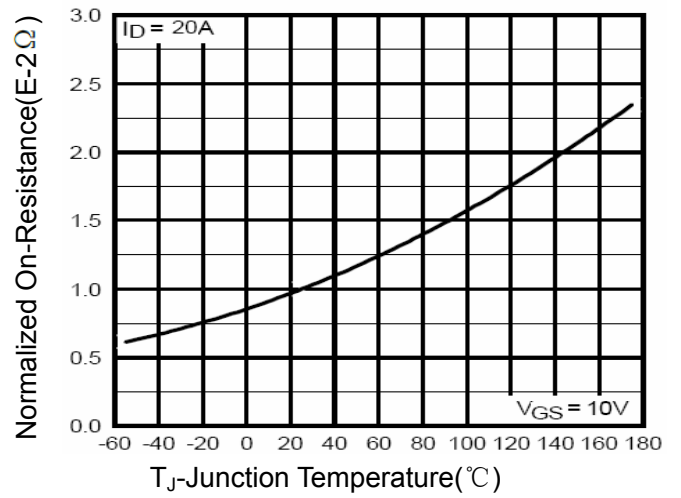


Figure 4 Rdson-Junction Temperature

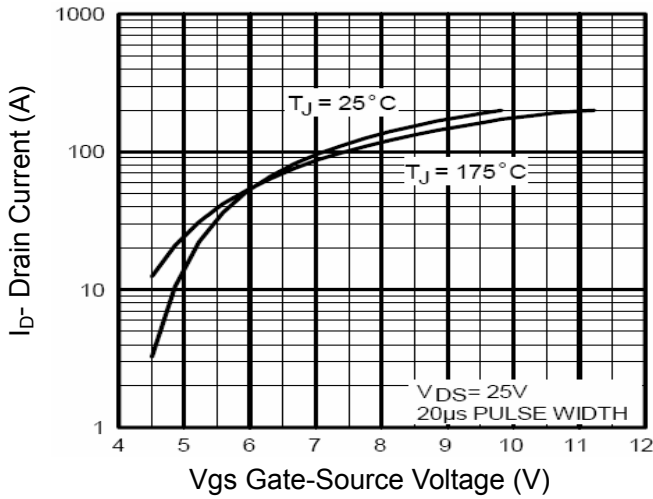


Figure 2 Transfer Characteristics

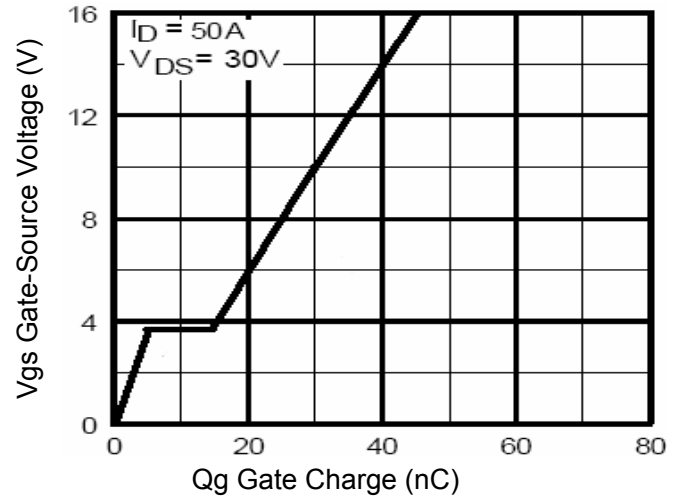


Figure 5 Gate Charge

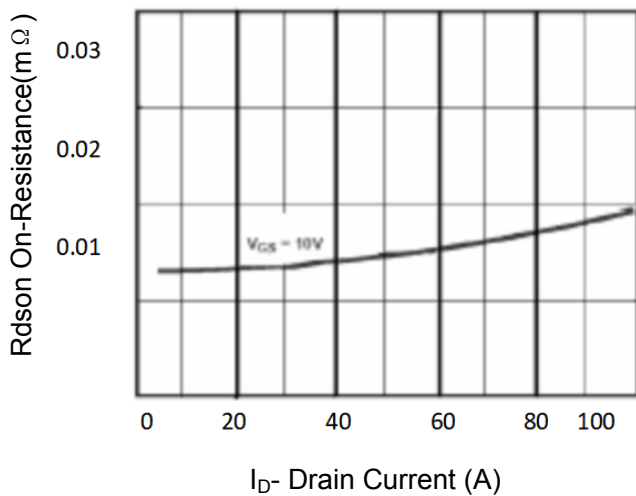


Figure 3 Rdson- Drain Current

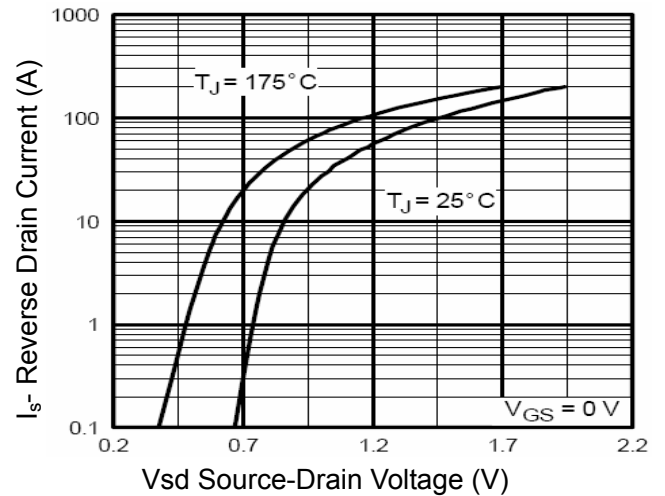


Figure 6 Source- Drain Diode Forward

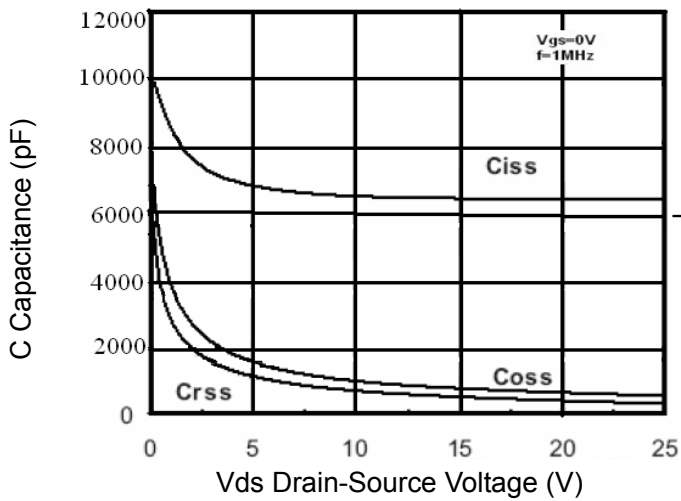


Figure 7 Capacitance vs Vds

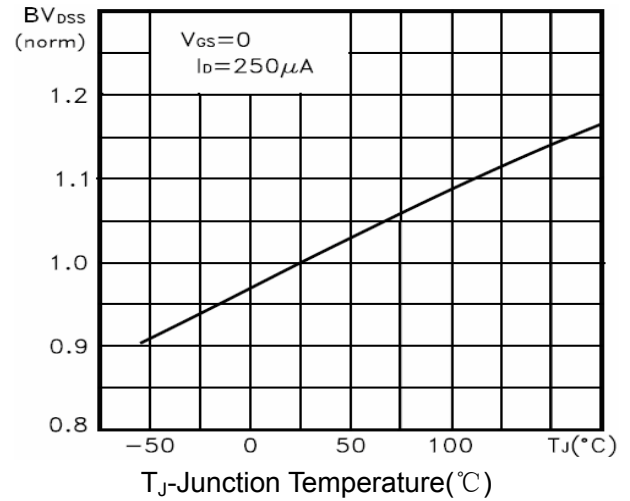


Figure 9 BV_{dss} vs Junction Temperature

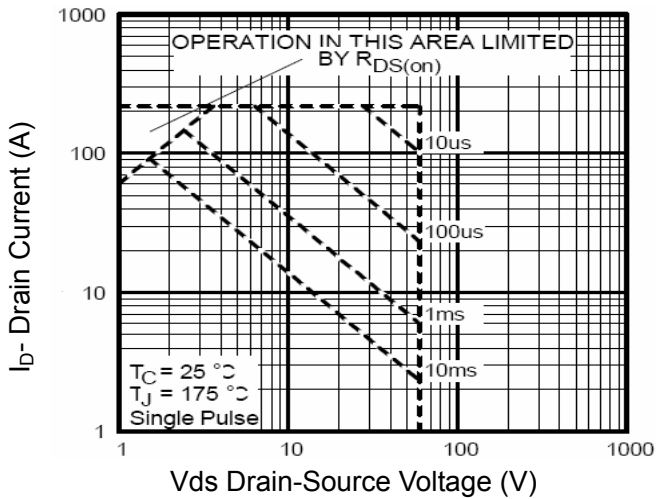


Figure 8 Safe Operation Area

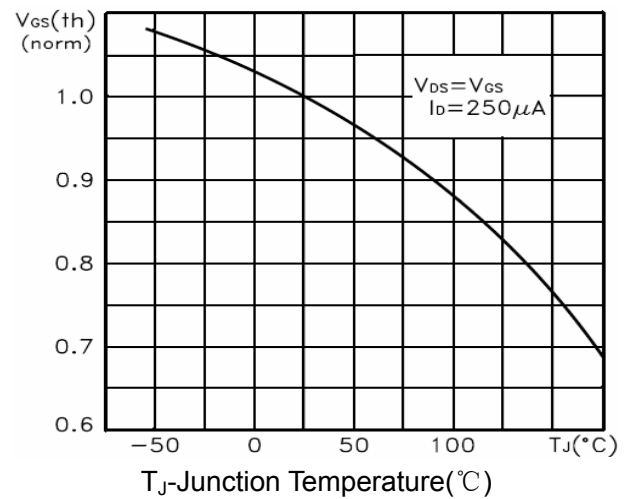


Figure 10 $V_{GS(th)}$ vs Junction Temperature

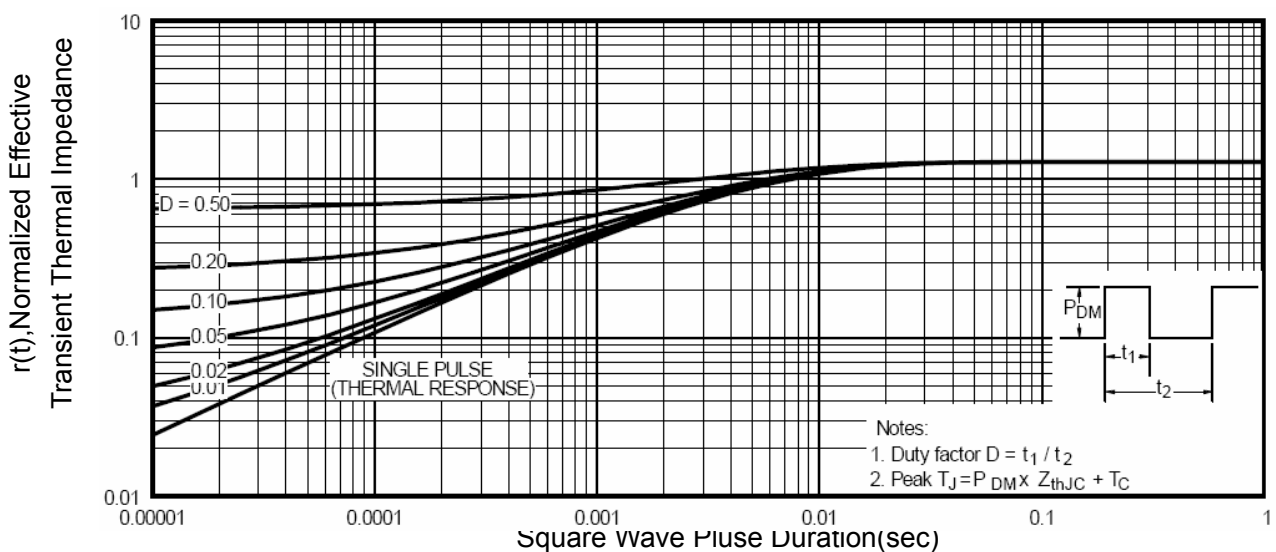
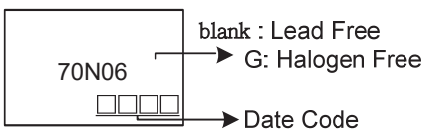


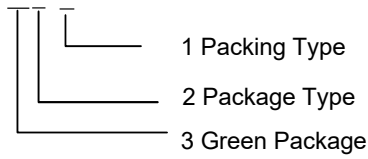
Figure 11 Normalized Maximum Transient Thermal Impedance

Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
ASDM70N06P	70N06	TO-220	Tube	50	-	-

PACKAGE	MARKING
TO-220	 <p>blank : Lead Free G: Halogen Free Date Code</p>

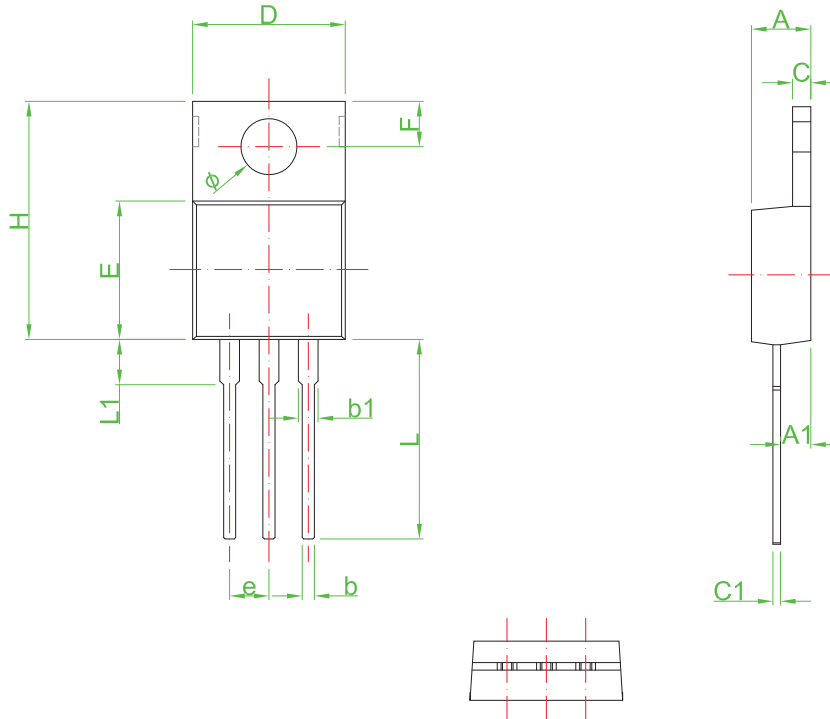
Ordering Number		Package
Lead Free	Halogen Free	
ASDM70N06P-T	ASDM70N06GP-T	TO-220

<p>ASDM70N06GP- T</p>  <p>1 Packing Type 2 Package Type 3 Green Package</p>	<p>1 T:Tube,R:Tape Reel 2 P:TO-220 3 blank : Lead Free G:Halogen Free and Lead Free</p>
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Package Information

TO-220

Dimensions are in millimeters unless otherwise specified



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.00	4.80	0.157	0.189
A1	1.80	2.80	0.071	0.110
b	0.60	1.00	0.024	0.039
b1	1.14	1.78	0.045	0.070
C	1.00	1.40	0.039	0.055
C1	0.36	0.61	0.014	0.024
D	9.90	10.50	0.390	0.413
E	8.38	9.20	0.330	0.362
e	2.54 TYP		0.100 TYP	
F	2.54	3.20	0.100	0.126
φ	3.50	3.90	0.138	0.154
H	14.48	15.87	0.570	0.625
L	13.00	13.80	0.512	0.543
L1	---	4.10	---	0.161

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