

N-Channel Enhancement Mode Power MOSFET

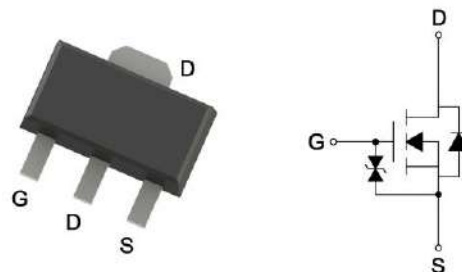
Features

- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free
- ESD protected gate

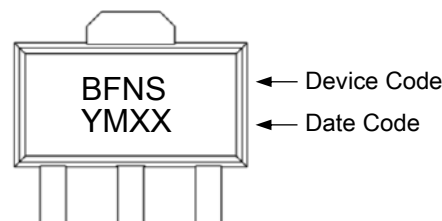
Product Summary

BV_{DSS}	60	V
$R_{DS(ON)}$ typ. @ $V_{GS}=10V$, $I_D=2A$	43	mΩ
$R_{DS(ON)}$ typ. @ $V_{GS}=4.5V$, $I_D=1A$	64	
I_D @ $V_{GS}=10V$, $T_C=25^\circ C$	7	A
I_D @ $V_{GS}=10V$, $T_A=25^\circ C$	4.4	

SOT-89



Marking



YMXXS: Date Code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

A: Jan	B: Feb	C: Mar	D: Apr	E: May	F: Jun
G: Jul	H: Aug	J: Sep	K: Oct	L: Nov	M: Dec

XX: Production Serial Number, 01~99

Ordering Information

Device	Package	Shipping
KM045N06KRE	SOT-89	1000pcs / Tape & Reel

Q: Product rank, zero for no rank products.

T2: Packing spec, T2 : 1000pcs / tape & reel, 7" reel

G: Environment friendly grade: S for RoHS compliant products, G for RoHS compliant and green compound products.

Absolute Maximum Ratings ($T_A=25^\circ C$)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	60	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current @ V _{GS} =10V, T _C =25°C (silicon limit)		I _D	12.5	A
Continuous Drain Current @ V _{GS} =10V, T _C =25°C (package limit)			7	
Continuous Drain Current @ V _{GS} =10V, T _C =100°C			7	
Continuous Drain Current @ V _{GS} =10V, T _A =25°C			4.4	
Continuous Drain Current @ V _{GS} =10V, T _A =70°C			3.5	
Pulsed Drain Current			I _{DM}	
Continuous Body Diode Forward Current @ T _C =25°C		I _S	7	
Pulsed Body Diode Forward Current @ T _C =25°C		I _{SM}	28	
Total Power Dissipation	T _C =25°C	P _D	16	
	T _C =100°C		6.4	
	T _A =25°C		1.9	
	T _A =70°C		1.2	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55~+150	°C
Steady State Thermal Resistance, Junction-to-Case		R _{θJC}	8	°C/W
Steady State Thermal Resistance, Junction-to-Ambient		R _{θJA}	65	

Electrical Characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

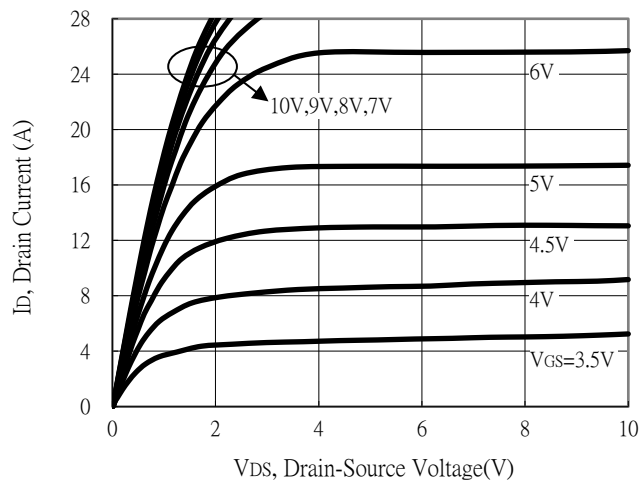
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	60	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	-	2.5		V _{DS} =V _{GS} , I _D =250μA
G _{FS}	-	2.8	-	S	V _{DS} =10V, I _D =2A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =48V, V _{GS} =0V
R _{DS(ON)}	-	43	56	mΩ	V _{GS} =10V, I _D =2A
	-	64	90		V _{GS} =4.5V, I _D =1A
Dynamic					
C _{iss}	-	250	-	pF	V _{DS} =30V, V _{GS} =0V, f=1MHz
C _{oss}	-	50	-		
C _{rss}	-	18	-		
R _g	-	13	-	Ω	f=1MHz
Q _g *d,e	-	2.7	-	nC	V _{DS} =30V, I _D =2A, V _{GS} =4.5V
Q _g *d,e	-	5.5	-		V _{DS} =30V, I _D =2A, V _{GS} =10V
Q _{gs} *d,e	-	1.1	-		
Q _{gd} *d,e	-	0.9	-		
t _{d(ON)} *d,e	-	4.7	-	ns	V _{DS} =30V, I _D =2A, V _{GS} =10V, R _{GS} =1Ω
t _r *d,e	-	16	-		
t _{d(OFF)} *d,e	-	19	-		
t _f *d,e	-	4.7	-		
Source-Drain Diode					
V _{SD} *d	-	0.84	1.2	V	I _S =2A, V _{GS} =0V
t _{rr}	-	9.2	-	ns	I _F =2A, di/dt=100A/μs
Q _{rr}	-	4.1	-	nC	

Note:

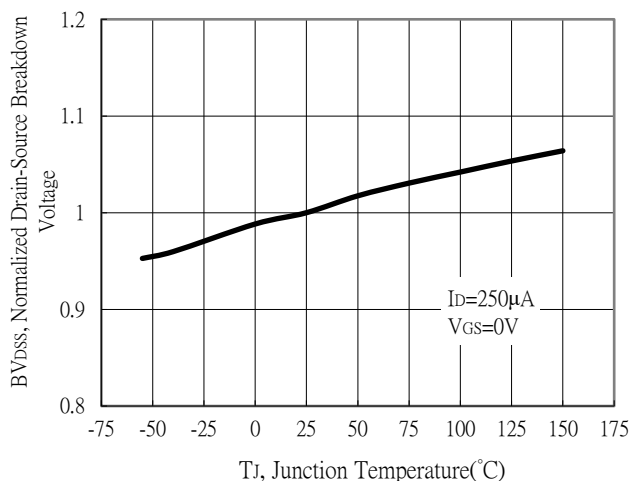
- *a. The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation.
- *b. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- *c. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^{\circ}\text{C}$.
- *d. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- *e. Independent of operating temperature.

Typical Characteristics

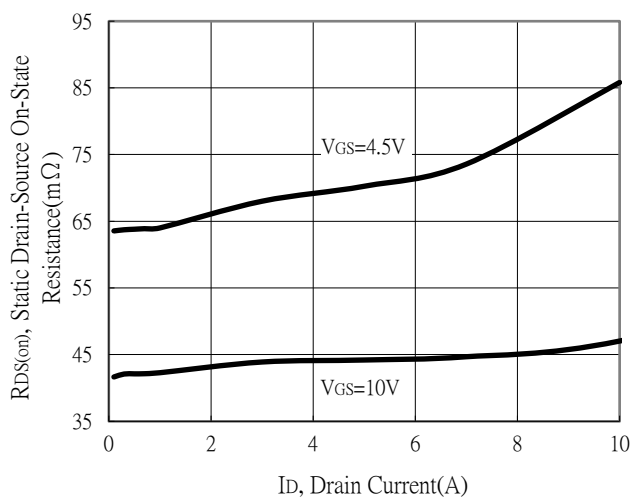
Typical Output Characteristics



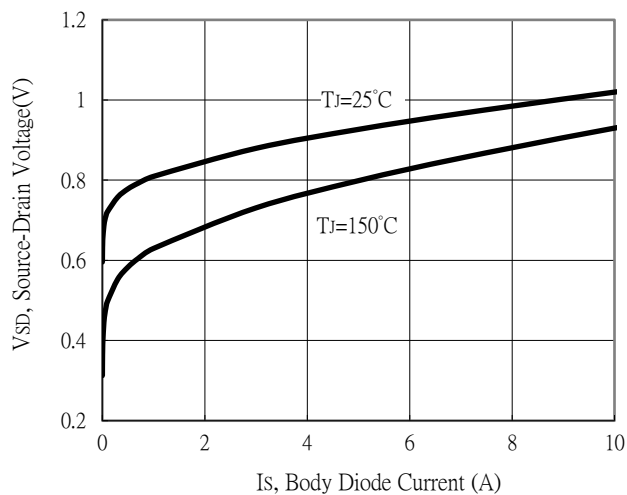
Breakdown Voltage vs Ambient Temperature



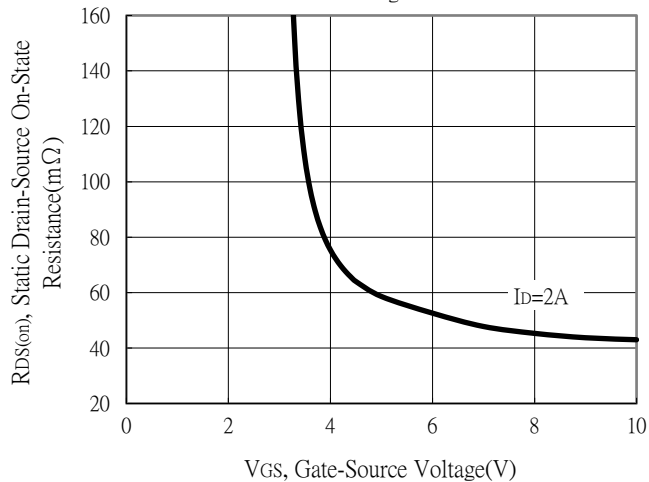
Static Drain-Source On-State resistance vs Drain Current



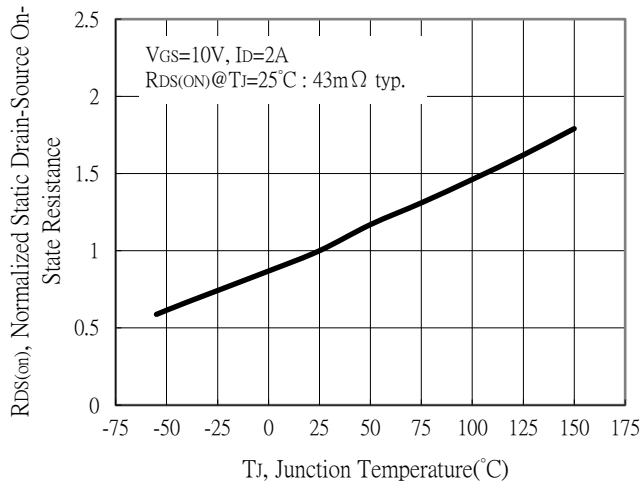
Body Diode Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

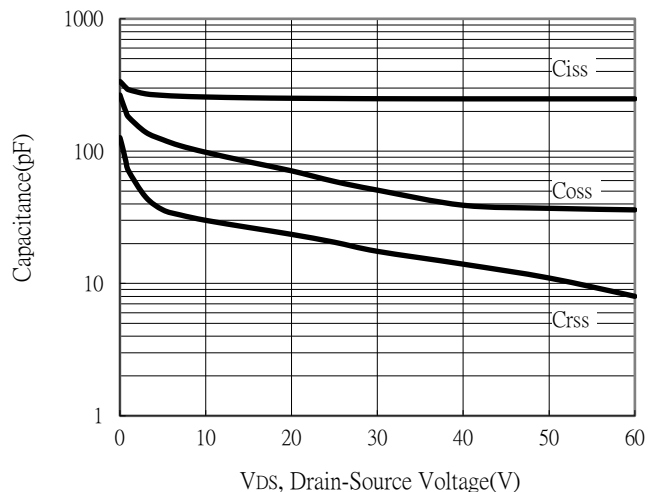


Drain-Source On-State Resistance vs Junction Temperature

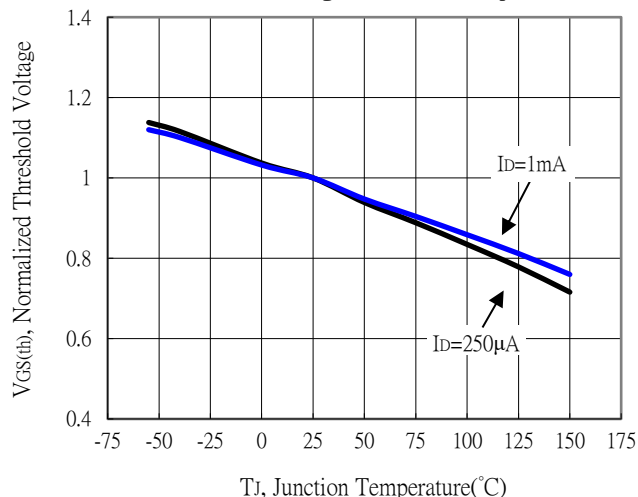


Typical Characteristics

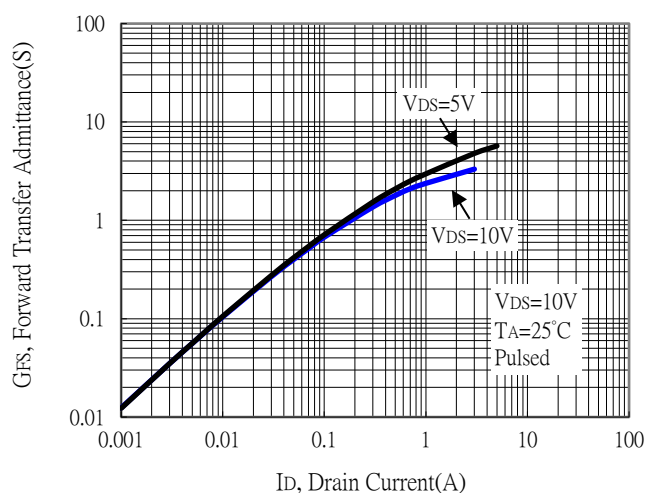
Capacitance vs Drain-to-Source Voltage



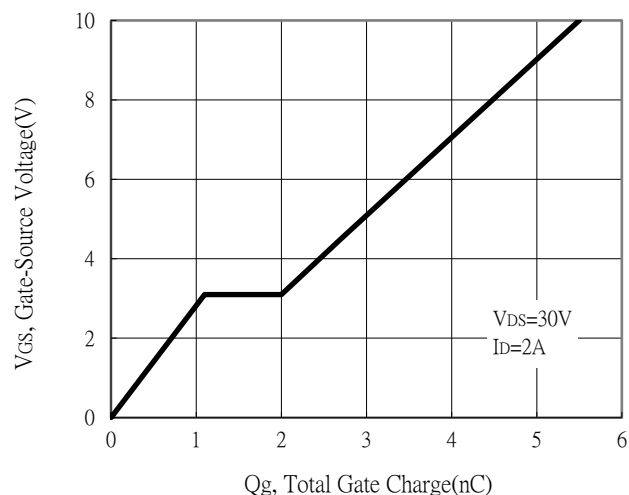
Threshold Voltage vs Junction Temperature



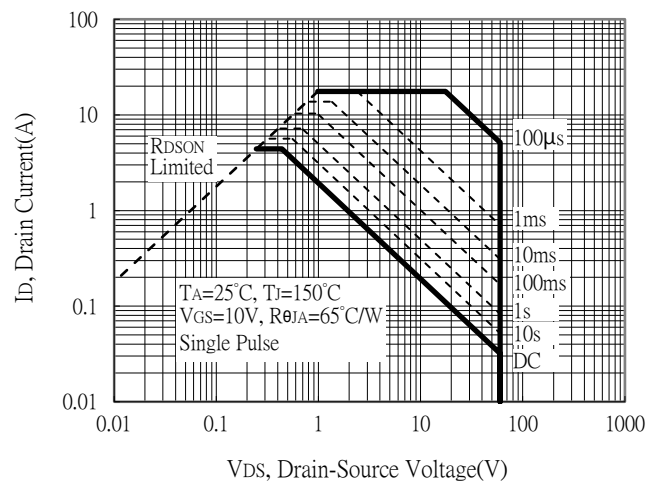
Forward Transfer Admittance vs Drain Current



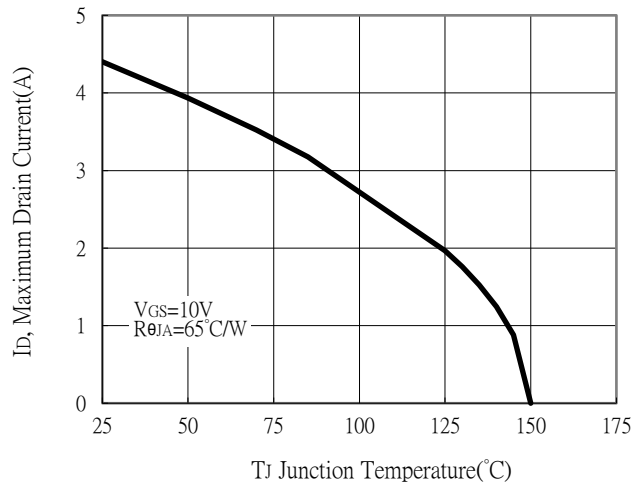
Gate Charge Characteristics



Maximum Safe Operating Area

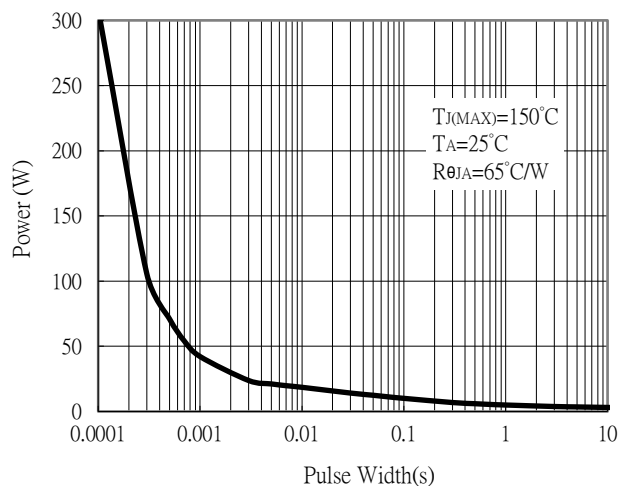


Maximum Drain Current vs Junction Temperature

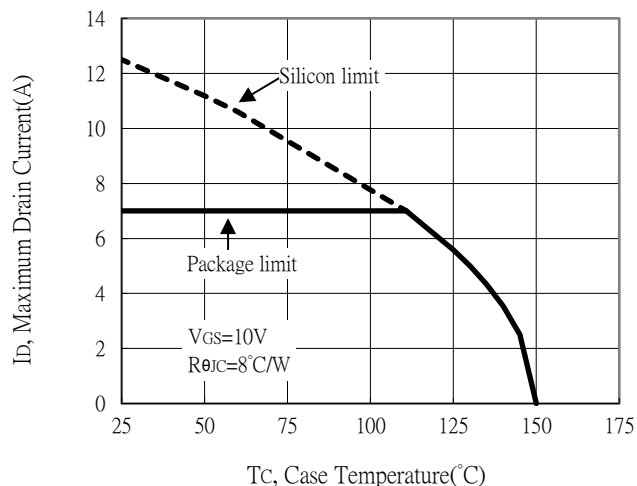


Typical Characteristics

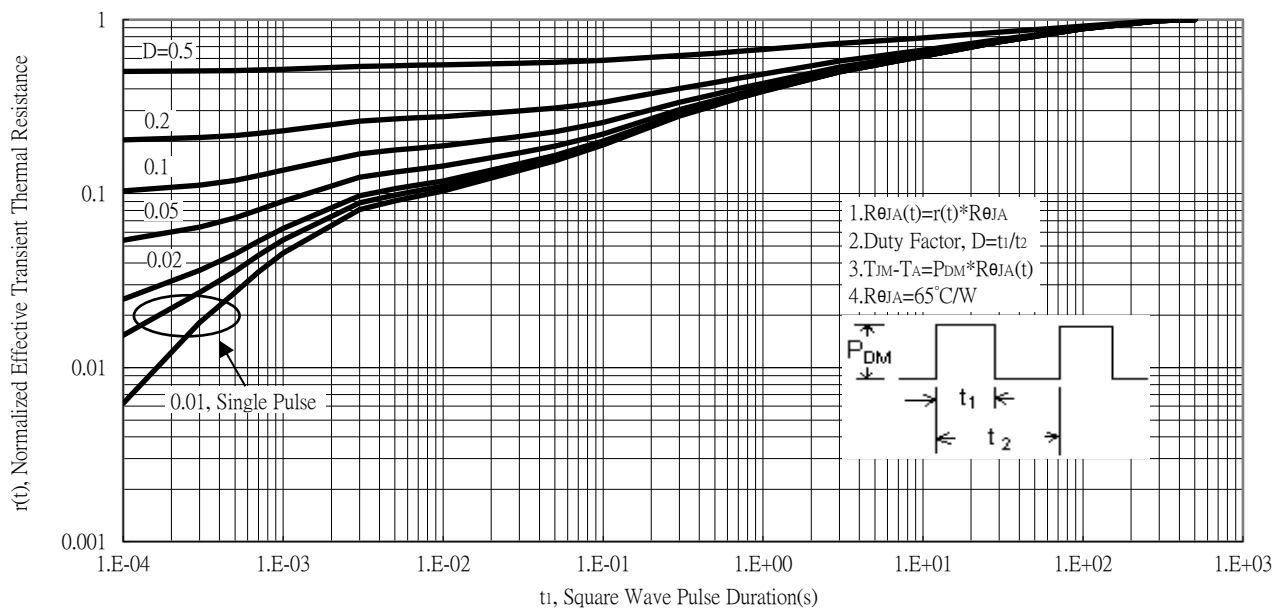
Single Pulse Power Rating, Junction to Ambient



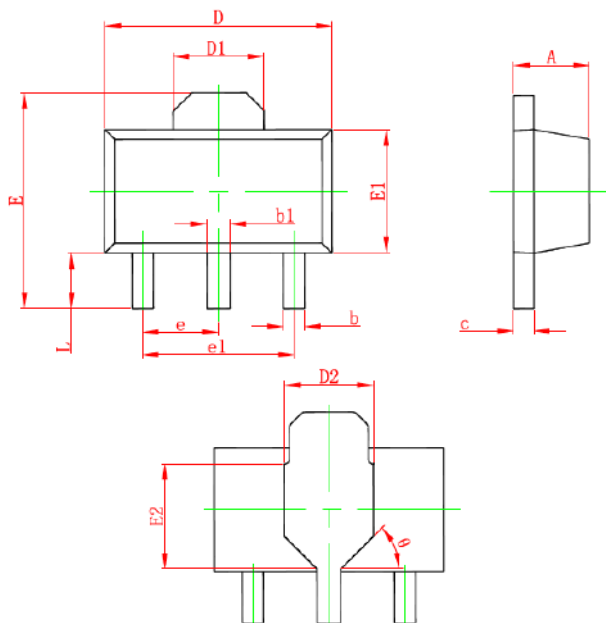
Maximum Drain Current vs Case Temperature



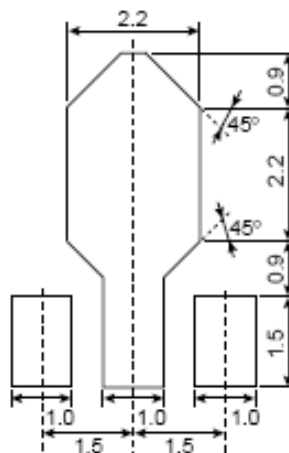
Transient Thermal Response Curves



SOT-89 Dimension



3-Lead SOT-89 Plastic Package

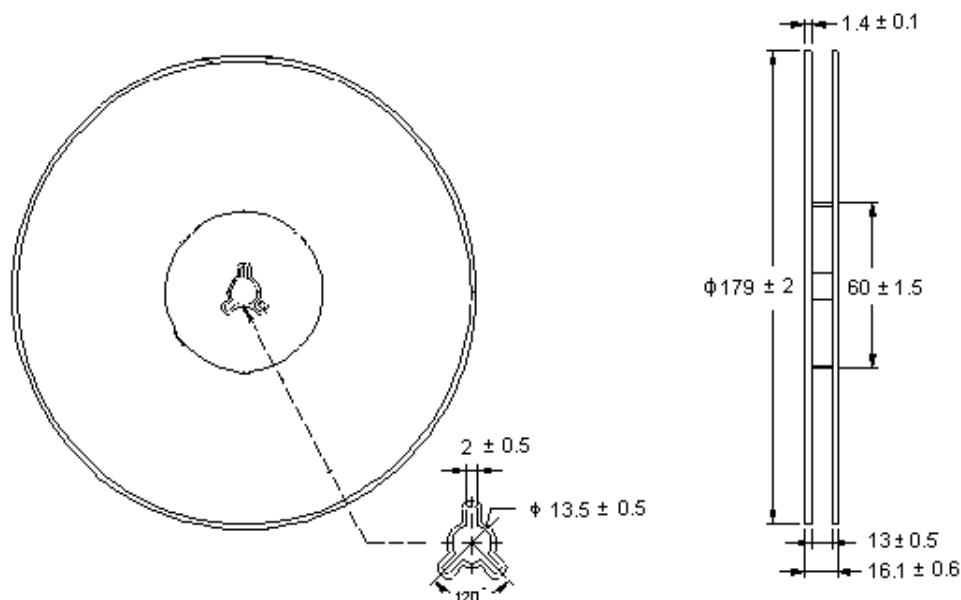


unit : mm

Recommended Soldering Footprint

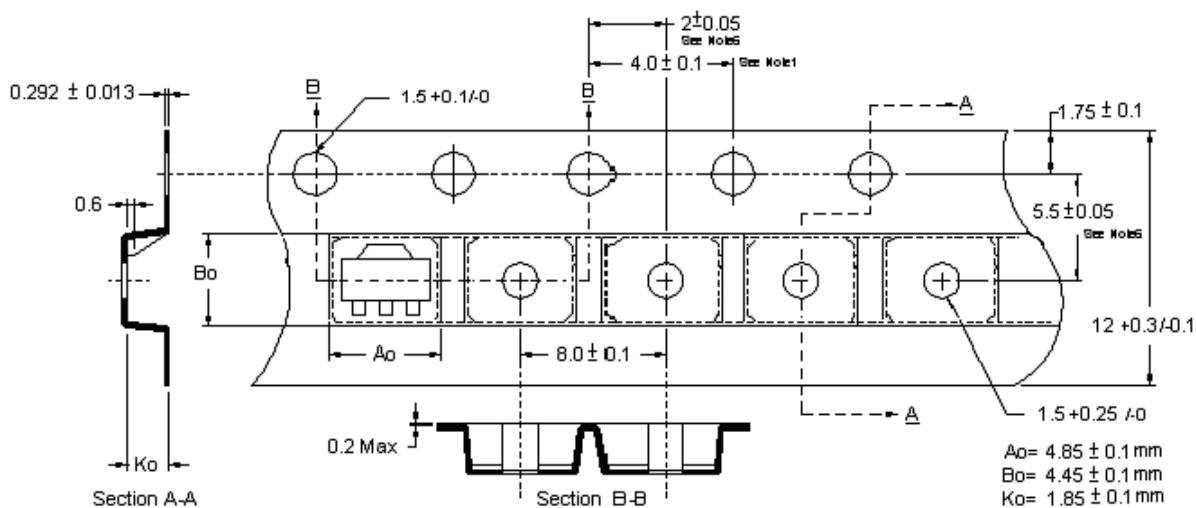
DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.055	0.063	1.40	1.60	E	0.155	0.167	3.94	4.25
b	0.013	0.020	0.32	0.52	E1	0.091	0.102	2.30	2.60
b1	0.016	0.023	0.40	0.58	E2	0.075	REF.	1.90	REF.
c	0.014	0.017	0.35	0.44	e	0.060	TYP.	1.50	TYP.
D	0.173	0.181	4.40	4.60	e1	0.118	TYP.	3.00	TYP.
D1	0.061	REF.	1.55	REF.	L	0.035	0.047	0.90	1.20
D2	0.069	REF.	1.75	REF.	θ	45°		45°	

Reel Dimension



Unit: millimeter

Carrier Tape Dimension



Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. A_0 & B_0 measured on a plane 0.3mm above the bottom of the pocket.
5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit: millimeter