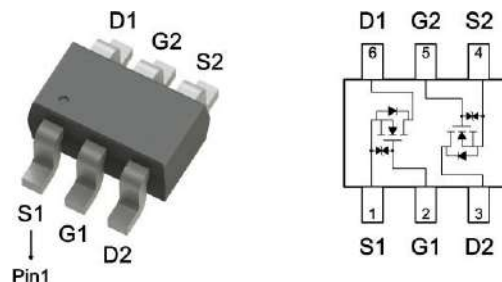


Dual N-Channel Enhancement Mode Power MOSFET

Features :

- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free
- ESD protected gate, typical 1kV (HBM)

SOT-363



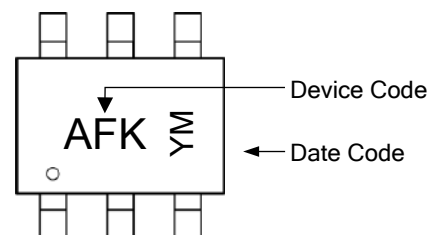
Ordering Information

Device	Package	Shipping
KWA140A03KE	SOT-363	3000pcs / Tape & Reel

Product Summary

BV_{DS}	30	V
$R_{DS(ON)}$ typ. @ $V_{GS}=4.5V$, $I_D=1A$	145	mΩ
$R_{DS(ON)}$ typ. @ $V_{GS}=2.5V$, $I_D=1A$	180	
I_D @ $V_{GS}=4.5V$, $T_A=25^{\circ}C$	1.2	A

Marking



YM: Date Code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

1: Jan	2: Feb	3: Mar	4: Apr	5: May	6: Jun
7: Jul	8: Aug	9: Sep	A: Oct	B: Nov	C: Dec

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 10	
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=25^{\circ}C$	I_D	1.2	A
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=70^{\circ}C$		1	
Pulsed Drain Current	I_{DM}	4.8	
Continuous Body Diode Forward Current @ $T_A=25^{\circ}C$	I_S	0.4	
Pulsed Body Diode Forward Current @ $T_A=25^{\circ}C$	I_{SM}	1.6	W
Total Power Dissipation	$T_A=25^{\circ}C$	0.5	
	$T_A=70^{\circ}C$	0.3	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	$-55^{\circ}C \sim +150^{\circ}C$	$^{\circ}C$
Steady State Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	260	$^{\circ}C/W$

Electrical Characteristics (T_A=25°C, unless otherwise specified)

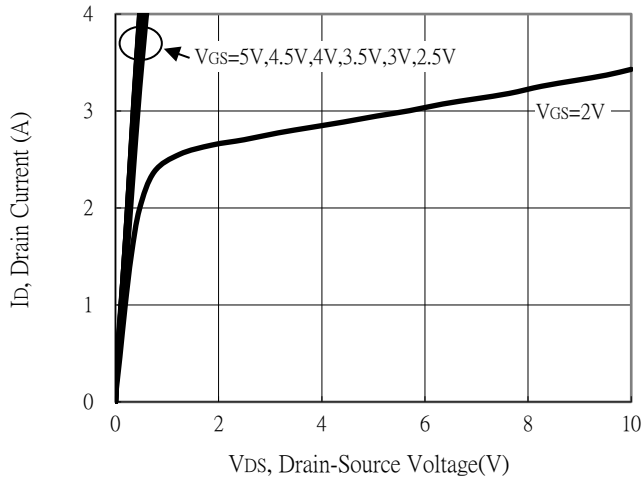
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	0.5	-	1.5		V _{DS} =V _{GS} , I _D =250μA
G _{FS}	-	3.7	-	S	V _{DS} =5V, I _D =1A
I _{GSS}	-	-	±10	μA	V _{GS} =±8V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =24V, V _{GS} =0V
R _{DS(ON)}	-	145	190	mΩ	V _{GS} =4.5V, I _D =1A
	-	180	250		V _{GS} =2.5V, I _D =1A
Dynamic					
C _{iss}	-	148	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	20	-		
C _{rss}	-	14	-		
R _g	-	14	-	Ω	f=1MHz
Q _g *c,d	-	2.1	-	nC	V _{DS} =15V, I _D =1A, V _{GS} =4.5V
Q _{gs} *c,d	-	0.7	-		
Q _{gd} *c,d	-	0.1	-		
t _{d(ON)} *c,d	-	5	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =4.5V, R _{GS} =6Ω
t _r *c,d	-	16	-		
t _{d(OFF)} *c,d	-	16	-		
t _f *c,d	-	6.5	-		
Source-Drain Diode					
V _{SD} *d	-	0.83	1.2	V	I _S =1A, V _{GS} =0V
t _{rr}	-	6	-	ns	I _F =1A, di/dt=100A/μs
Q _{rr}	-	2.3	-	nC	

Note:

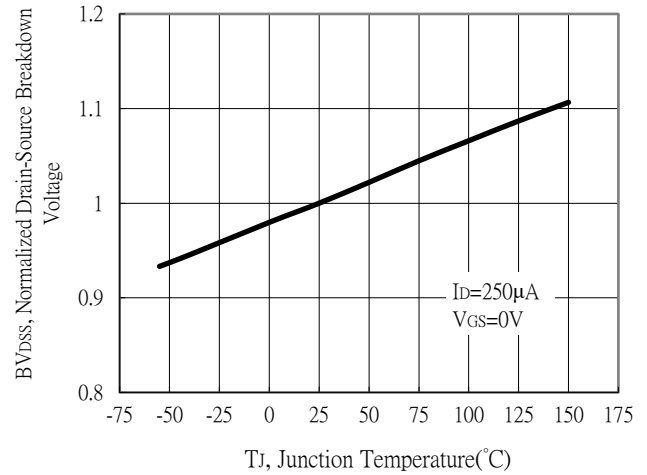
- *a. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific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

Typical Characteristics

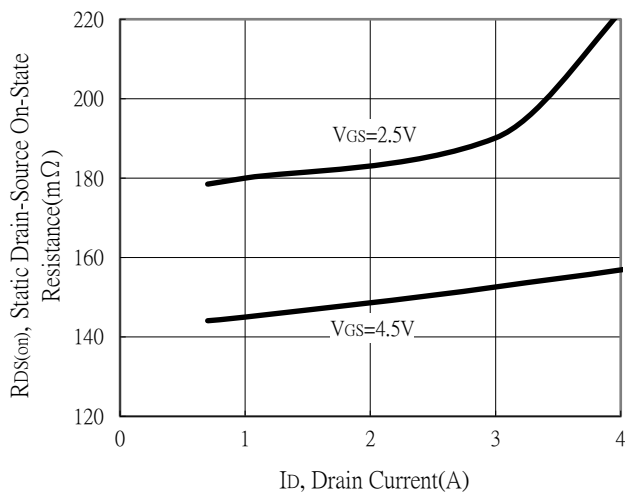
Typical Output Characteristics



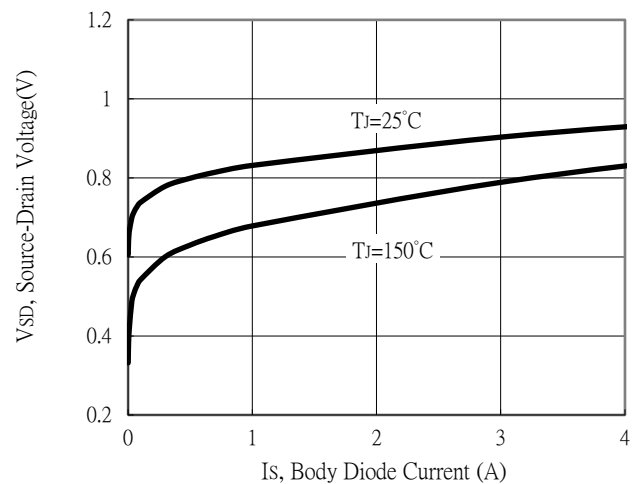
Breakdown Voltage vs Ambient Temperature



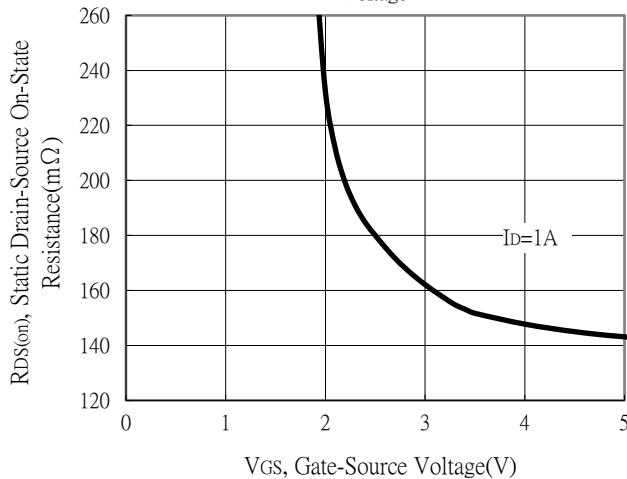
Static Drain-Source On-State resistance vs Drain Current



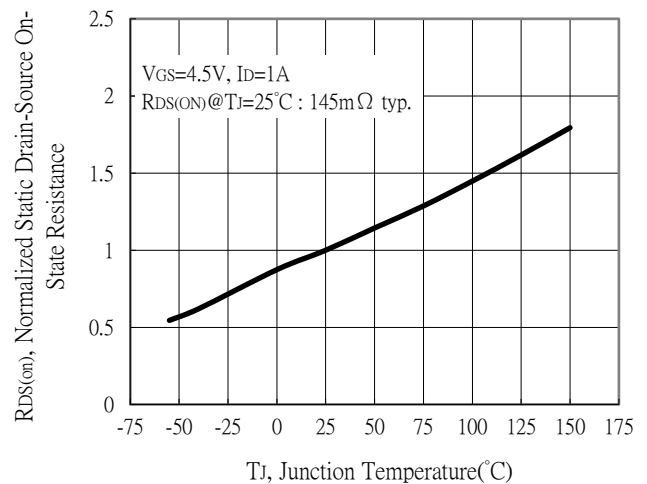
Body Diode Current vs Source-Drain Voltage



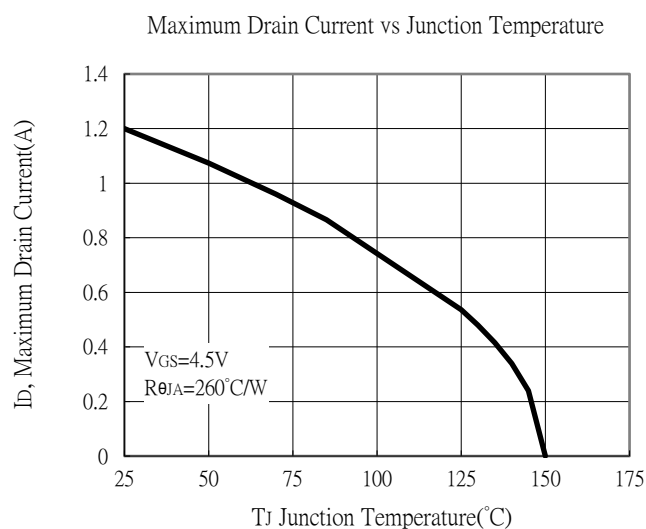
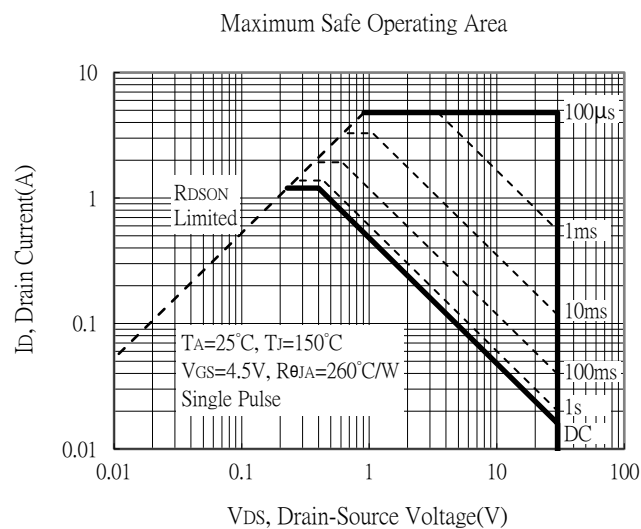
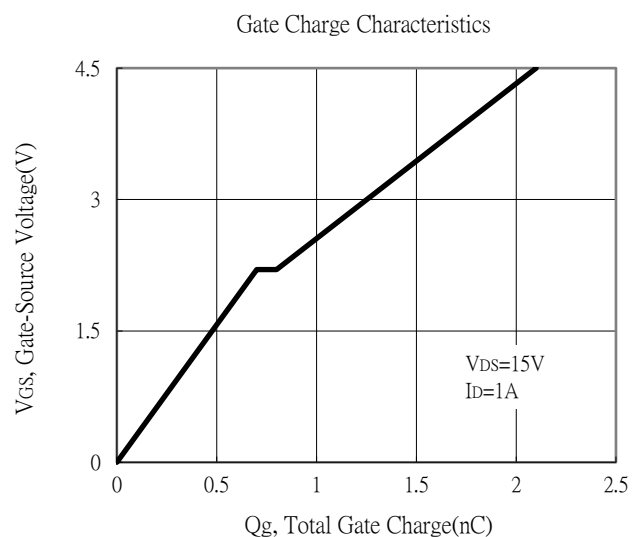
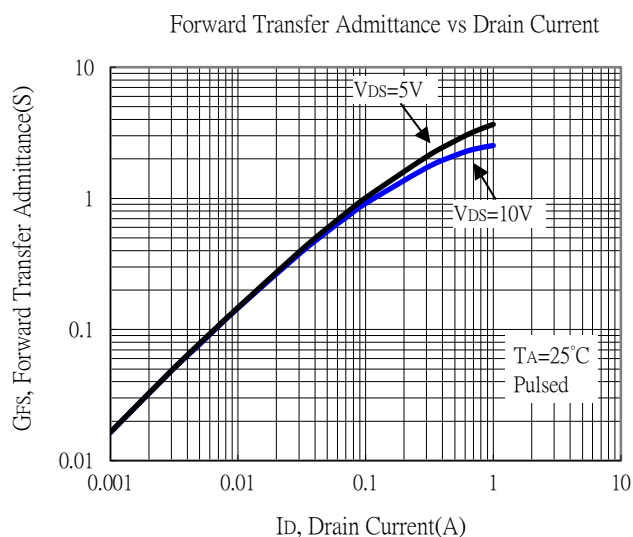
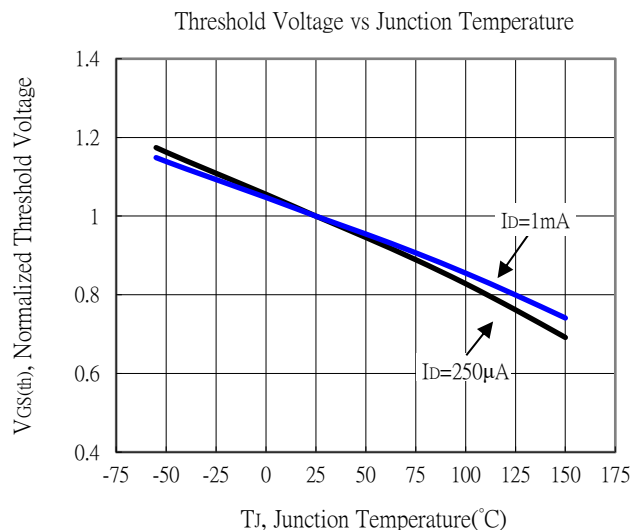
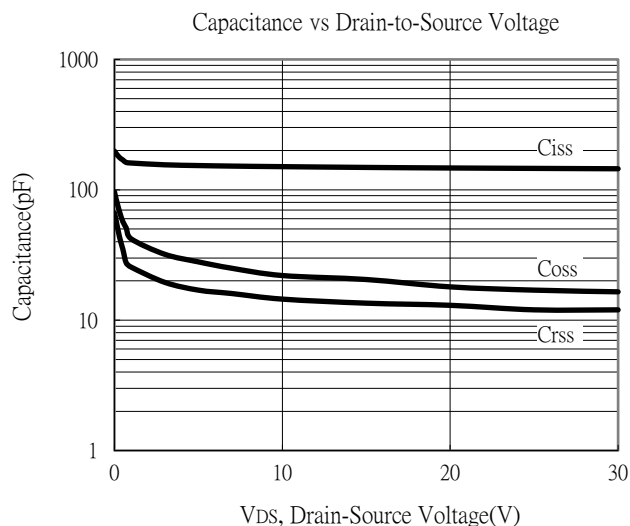
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

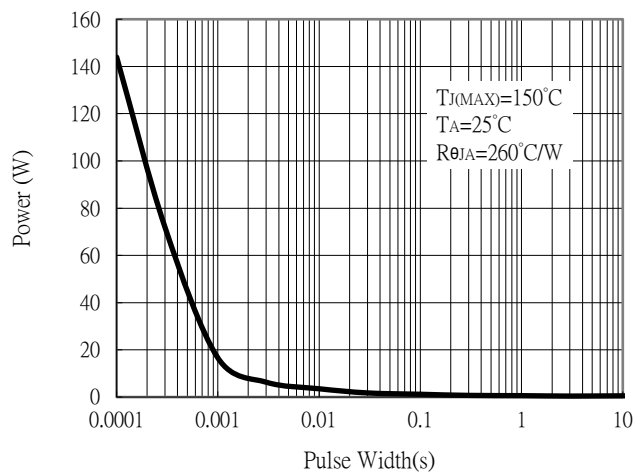


Typical Characteristics

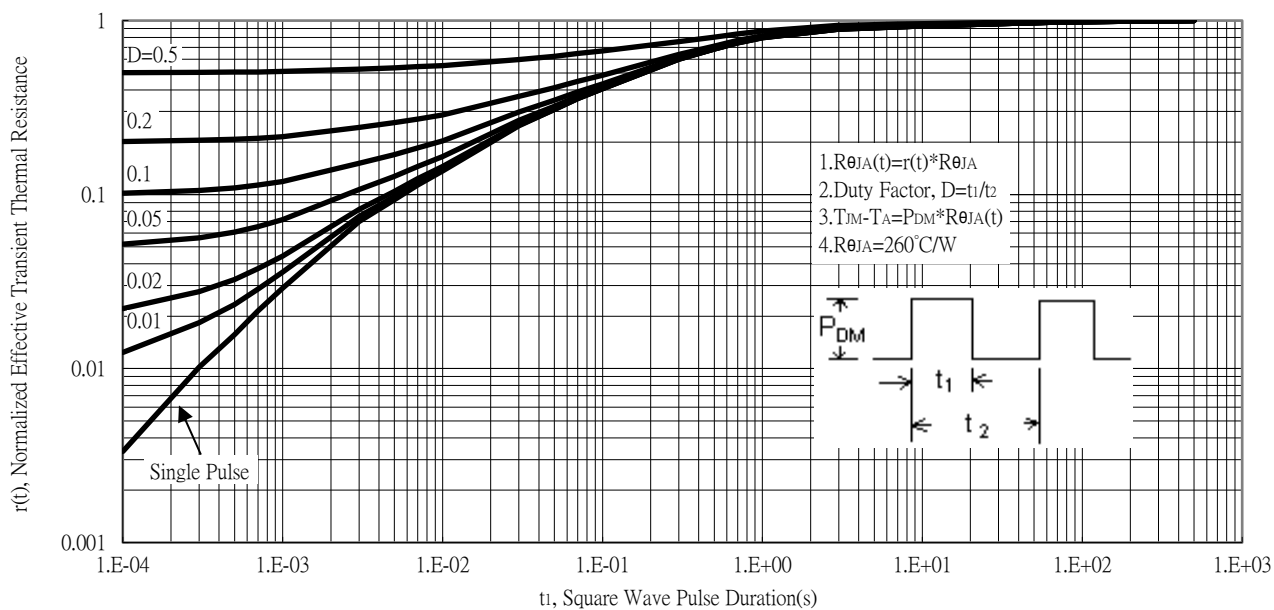


Typical Characteristics

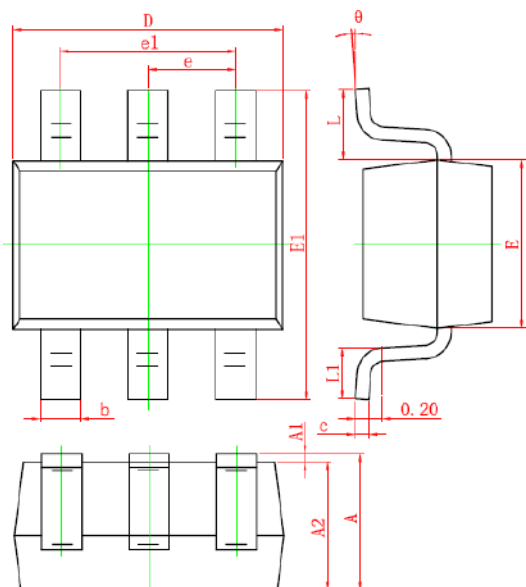
Single Pulse Power Rating, Junction to Ambient



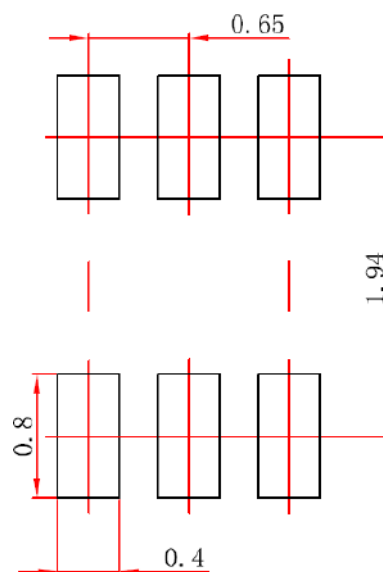
Transient Thermal Response Curves



SOT-363 Dimension



6-Lead SOT-363 Plastic Surface Mount Package



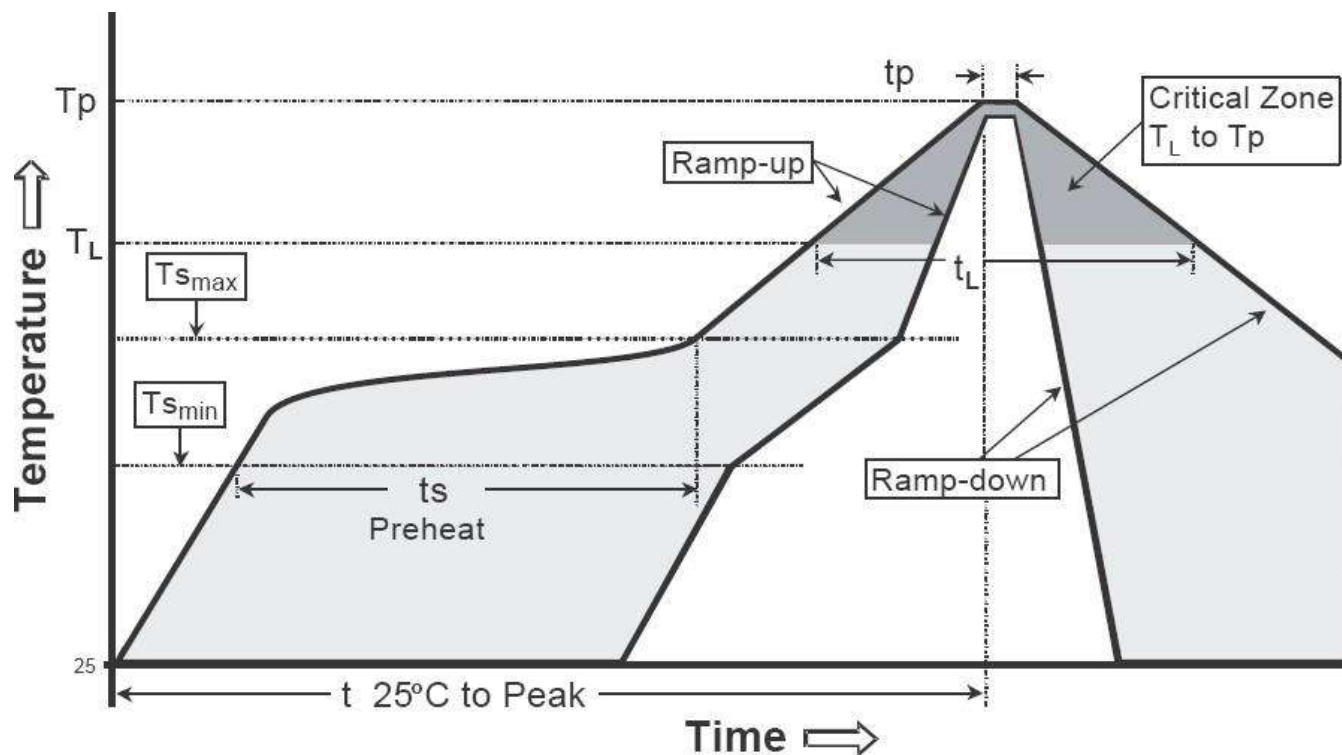
Recommended Soldering Footprint

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.035	0.043	0.900	1.100	E1	0.085	0.096	2.150	2.450
A1	0.000	0.004	0.000	0.100	e	0.026	TYP.	0.650	TYP.
A2	0.035	0.039	0.900	1.000	e1	0.047	0.055	1.200	1.400
b	0.006	0.014	0.150	0.350	L	0.021	REF.	0.525	REF.
c	0.003	0.006	0.080	0.150	L1	0.010	0.018	0.260	0.460
D	0.079	0.087	2.000	2.200	θ	0°	8°	0°	8°
E	0.045	0.053	1.150	1.350					

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (TS max to TP)	3°C/second max.	3°C/second max.
Preheat -Temperature Min (TS min) -Temperature Max (TS max) -Time (ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (TL) -Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature (TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature (tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.