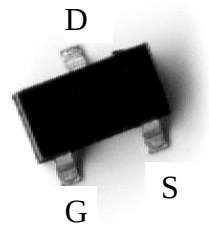
-14V P-Channel Enhancement Mode MOSFET

Features:

- Low gate charge
- Compact and low profile SOT-323 package
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Pb-free lead plating package

Outline

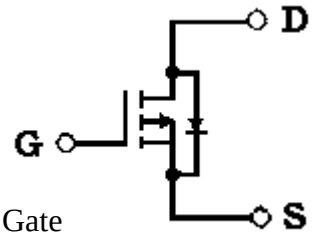
SOT-323



BV_{DSS}	-14V
I_D @ V_{GS}=-10V, T_A=25°C	-1.7A
R_{DSON}@V_{GS}=-4.5V, I_D=-1.7A	66mΩ(typ)
R_{DSON}@V_{GS}=-2.5V, I_D=-1.7A	86mΩ(typ)
R_{DSON}@V_{GS}=-1.8V, I_D=-1A	121mΩ(typ)
R_{DSON}@V_{GS}=-1.5V, I_D=-1A	181mΩ(typ)

Symbol

KWA050P01S3



G：Gate
S：Source
D：Drain

Ordering Information

Device	Package	Shipping
KWA050P01S3	SOT-323 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-14	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current @ T_A=25°C, V_{GS}=-4.5V (Note 3)	I_D	-1.7	A
Continuous Drain Current @ T_A=70°C, V_{GS}=-4.5V (Note 3)		-1.4	
Pulsed Drain Current (Notes 1, 2)	I_{DM}	-6.8	
Maximum Power Dissipation (Note 3)	P_D	0.34	W
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted) (Note 3)	$R_{\theta JA}$	367	°C/W

Note : 1. Pulse width limited by maximum junction temperature.
2. Pulse width≤ 300μs, duty cycle≤2%.
3. Surface mounted on 1 in² copper pad of FR-4 board.

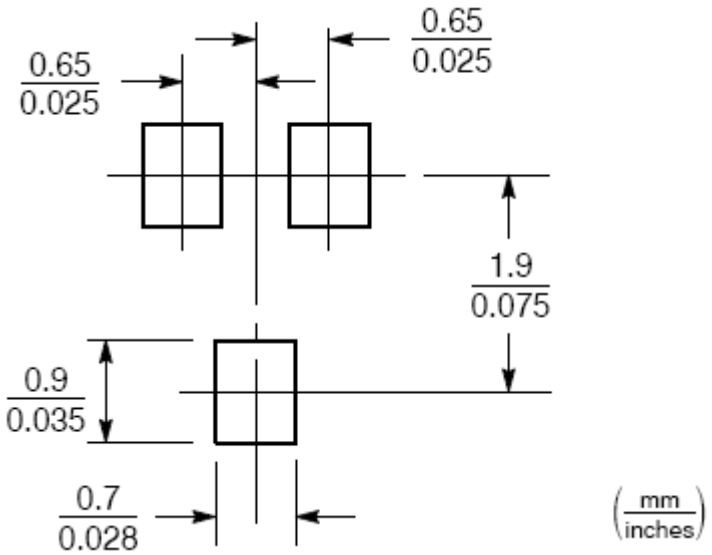
Electrical Characteristics (Tj=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-14	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	8	-	mV/°C	Reference to 25°C, I_D=-250μA
$V_{GS(th)}$	-0.4	-	-1.0	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±8V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-12V, V_{GS}=0V
	-	-	-10		V_{DS}=-10V, V_{GS}=0V (Tj=70°C)
*$R_{DS(ON)}$	-	66	90	mΩ	V_{GS}=-4.5V, I_D=-1.7A
	-	86	120		V_{GS}=-2.5V, I_D=-1.7A
	-	121	170		V_{GS}=-1.8V, I_D=-1A
	-	181	270		V_{GS}=-1.5V, I_D=-1A
*G_{FS}	-	5.5	-	S	V_{DS}=-5V, I_D=-2A
Dynamic					
Ciss	-	516	-	pF	V_{DS}=-10V, V_{GS}=0V, f=1MHz
Coss	-	144	-		
Crss	-	134	-		
$t_{d(ON)}$	-	9.8	-	ns	V_{DS}=-10V, I_D=-1A, V_{GS}=-5V, R_G=3.3Ω
t_r	-	22.6	-		
$t_{d(OFF)}$	-	39.6	-		
t_f	-	21.2	-		
Qg	-	7.6	-	nC	V_{DS}=-10V, I_D=-2A, V_{GS}=-4.5V
Qgs	-	0.8	-		
Qgd	-	2.8	-		

Source-Drain Diode					
*V_{SD}	-	-0.9	-1.2	V	V_{GS}=0V, I_S=-1.7A
Trr	-	30	-	ns	V_{GS}=0V, I_F=-2A, dI_F/dt=100A/μs
Qrr	-	9.5	-	nC	

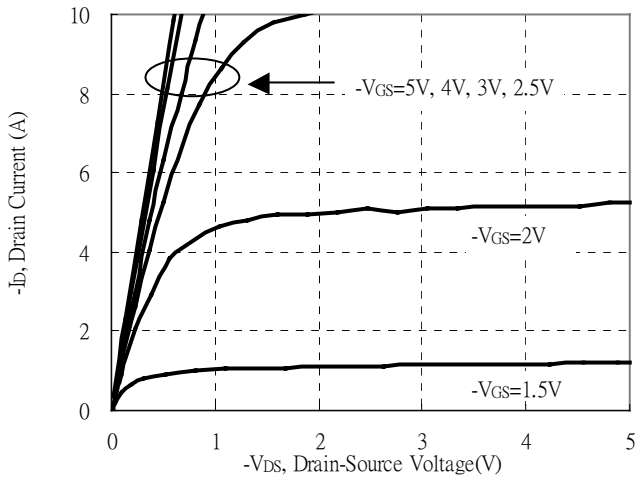
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

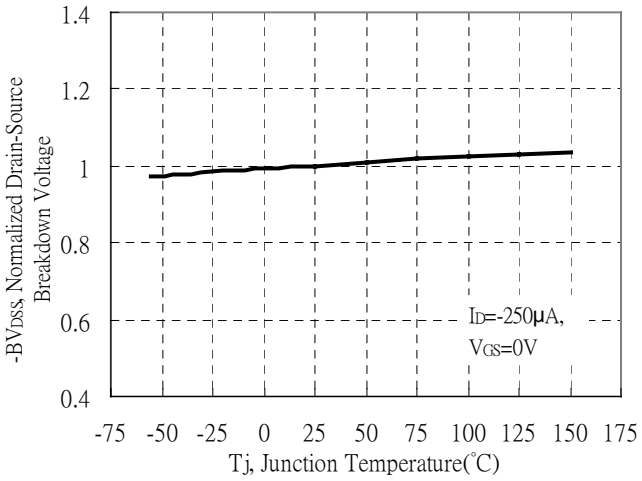


Typical Characteristics

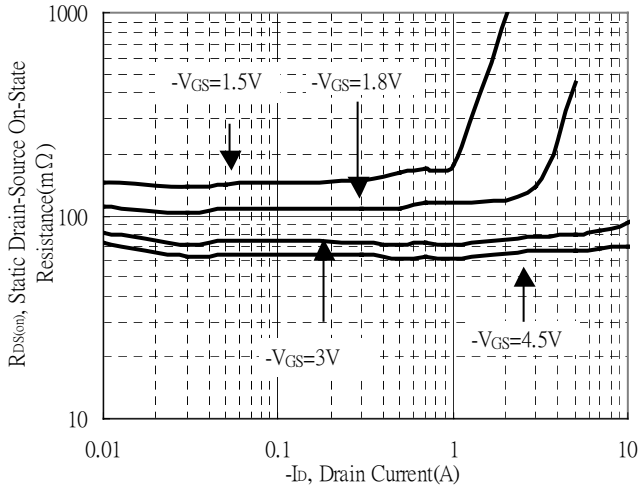
Typical Output Characteristics



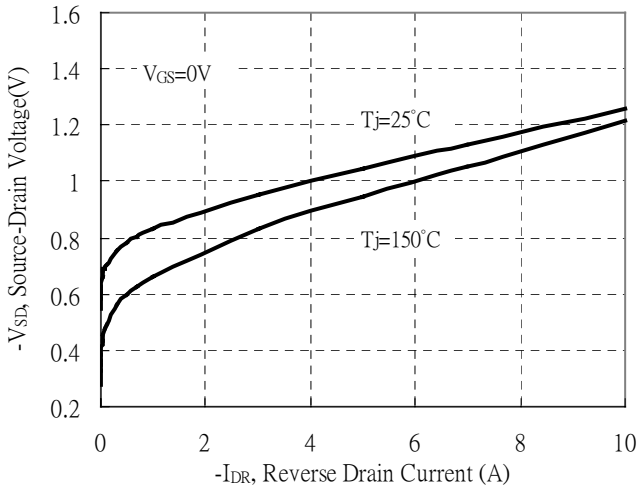
Brekdown Voltage vs Ambient Temperature



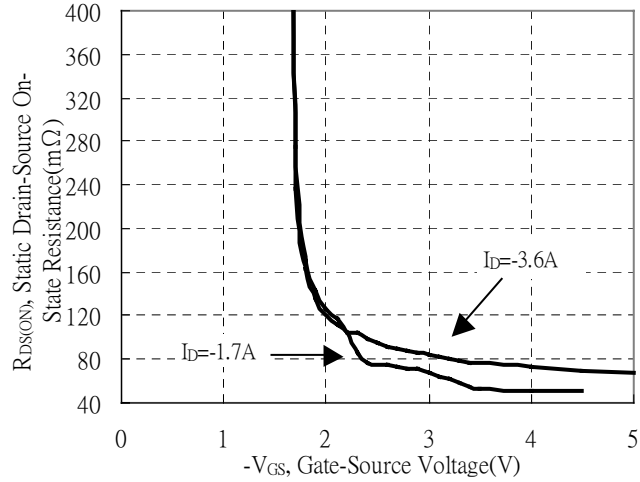
Static Drain-Source On-State resistance vs Drain Current



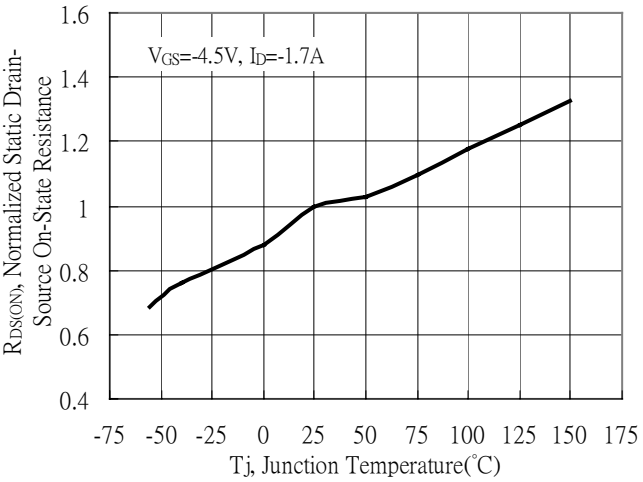
Reverse Drain Current vs Source-Drain Voltage



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

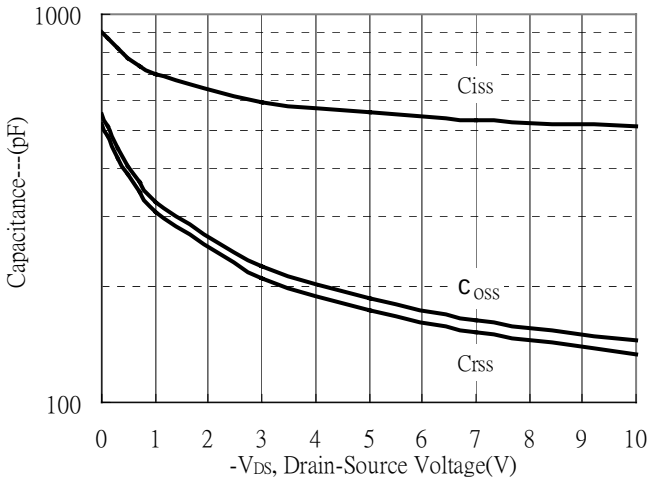


Drain-Source On-State Resistance vs Junction Tempearture

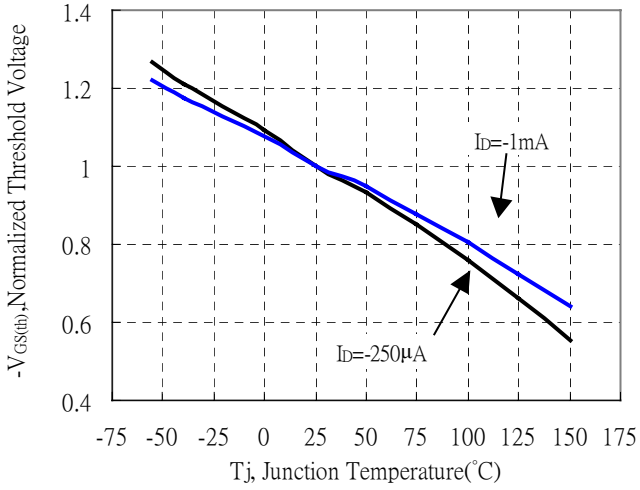


Typical Characteristics(Cont.)

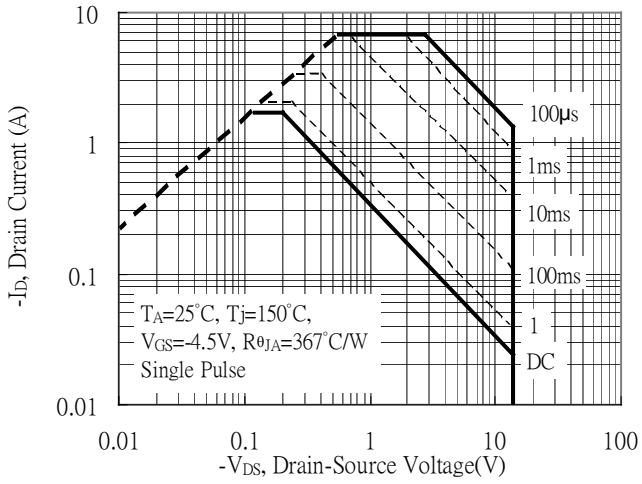
Capacitance vs Drain-to-Source Voltage



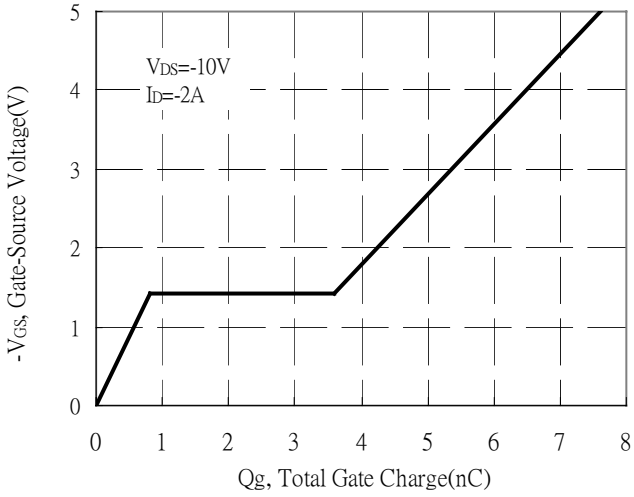
Threshold Voltage vs Junction Tempearture



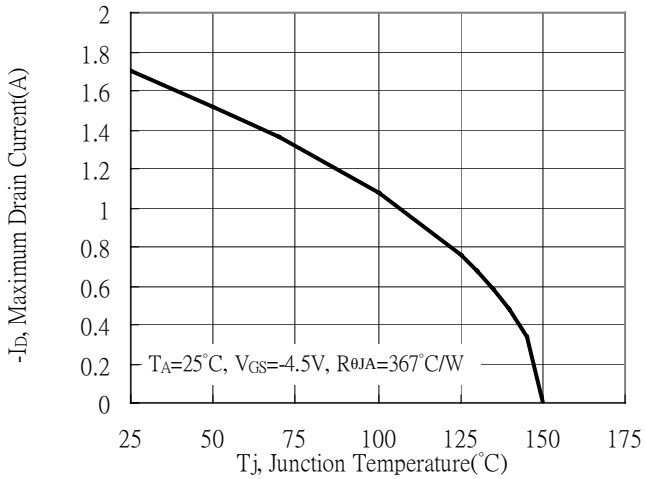
Maximum Safe Operating Area



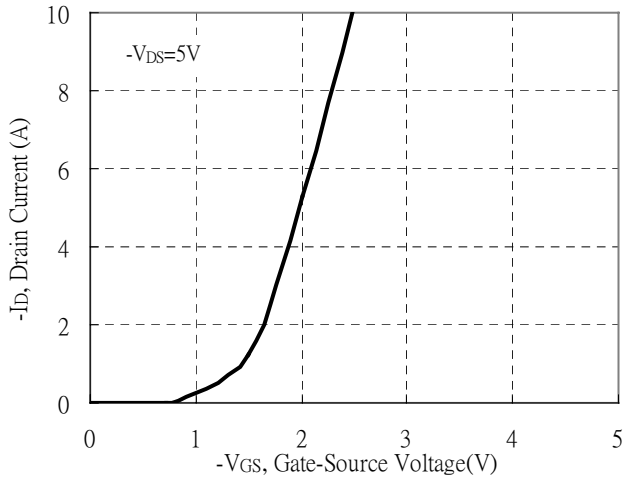
Gate Charge Characteristics



Maximum Drain Current vs JunctionTemperature

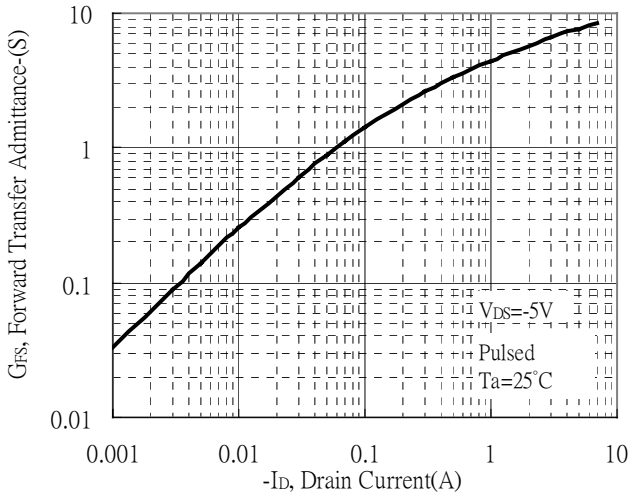


Typical Transfer Characteristics

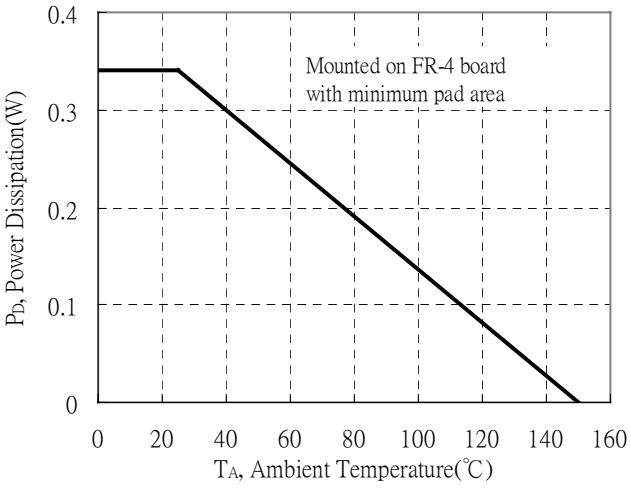


Typical Characteristics(Cont.)

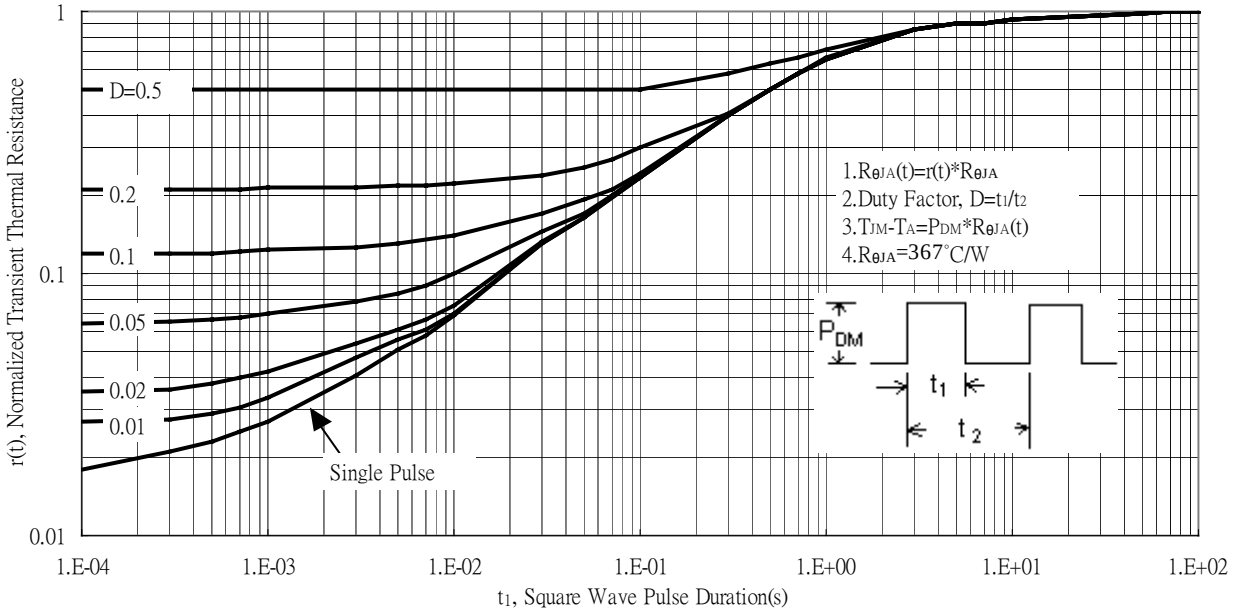
Forward Transfer Admittance vs Drain Current



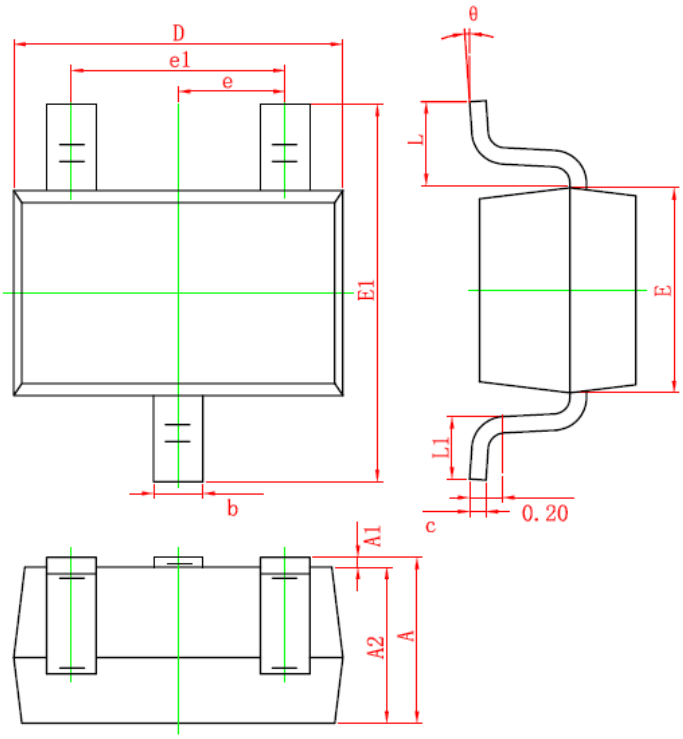
Power Derating Curve

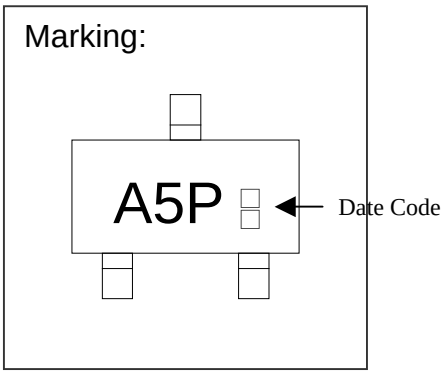


Transient Thermal Response Curves



SOT-323 Dimension





3-Lead SOT-323 Plastic
Surface Mounted Package
Code: S3

Style: Pin 1.Gate 2.Source 3.Drain

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650 TYP		0.026 TYP	
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.200	0.400	0.008	0.016	L	0.525 REF		0.021 REF	
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					