

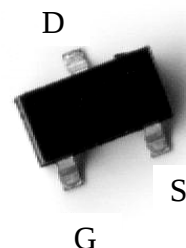
30V N-Channel Enhancement Mode MOSFET

Features:

- Lower gate charge
- ESD protected gate
- Pb-free lead plating and Halogen-free package

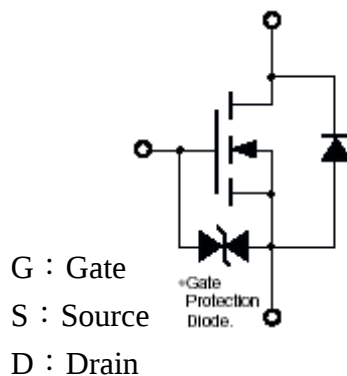
Outline

SOT-23



Equivalent Circuit

KWB55N03KSN3



BV_{DSS}	30V
$I_D @ V_{GS}=10V, T_A=25^{\circ}C$	4.8A
$R_{DS(on)(TYP)} @ V_{GS}=10V, I_D=4.2A$	35m Ω
$R_{DS(on)(TYP)} @ V_{GS}=4.5V, I_D=2A$	50m Ω

Ordering Information

Device	Package	Shipping
KWB55N03KSN3	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±16	
Continuous Drain Current	I _D	T _A =25°C, V _{GS} =10V	A
		T _A =70°C, V _{GS} =10V	
Pulsed Drain Current	I _{DM}	20 (Note 1 & 2)	
Power Dissipation	P _D	T _A =25°C	W
		T _A =70°C	
Operating Junction and Storage Temperature	T _j , T _{stg}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient, max	R _{θJA}	90 *2	°C/W
Thermal Resistance, Junction to Case, max	R _{θJC}	70	

Note : 1. Pulse width limited by maximum junction temperature.

2. Duty cycle ≤ 1%.

3. Surface mounted on 1 in² copper pad of FR4 board, t≤10s; 270°C/W when mounted on min. copper pad.

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)}	1	-	2.5		V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _j =55°C
*R _{DS(ON)} ¹	-	35	45	mΩ	I _D =4.2A, V _{GS} =10V
	-	50	65		I _D =2A, V _{GS} =4.5V
*G _{FS} ¹	-	5.5	-	S	V _{DS} =5V, I _D =3.5A
Dynamic					
C _{iss}	-	171	-	pF	V _{DS} =10V, V _{GS} =0V, f=1MHz
C _{oss}	-	59	-		
C _{rss}	-	35	-		
*t _{d(ON)} ^{1 2}	-	3.6	-	ns	V _{DS} =15V, I _D =4.2A, V _{GS} =10V, R _G =3Ω
*t _r ^{1 2}	-	16	-		
*t _{d(OFF)} ^{1 2}	-	11.4	-		
*t _f ^{1 2}	-	4.4	-		

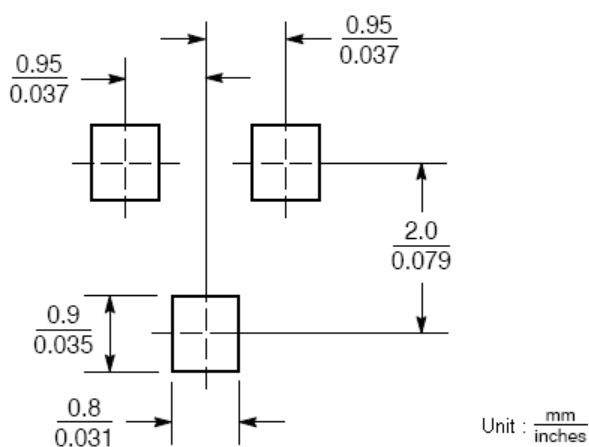
*Qg ^{1 2}	-	2.7	-	nC	V _{DS} =15V, I _D =4.2A, V _{GS} =4.5V
*Qgs ^{1 2}	-	0.9	-		
*Qgd ^{1 2}	-	0.8	-		
Source-Drain Diode					
I _S	-	-	2	A	
I _{SM} ³	-	-	8		
V _{SD} ¹	-	0.78	1	V	I _S =1A, V _{GS} =0V
trr ¹	-	6.6	-	ns	I _F =4.2A, dI _F /dt=100A/μs
Qrr ¹	-	2	-	nC	

¹ Pulse test : Pulse width≤300μs, Duty cycle≤2%

² Independent of operating temperature

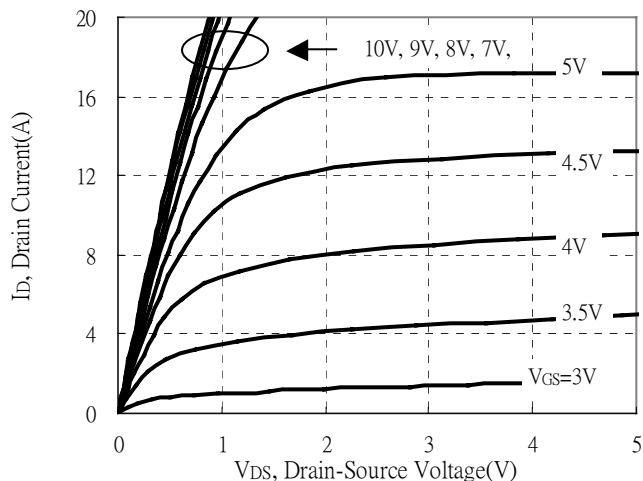
³ Pulse width limited by maximum junction temperature

Recommended Soldering Footprint

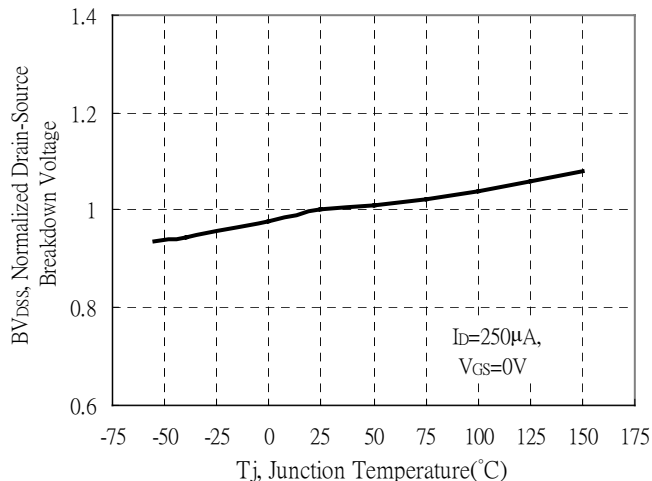


Typical Characteristics

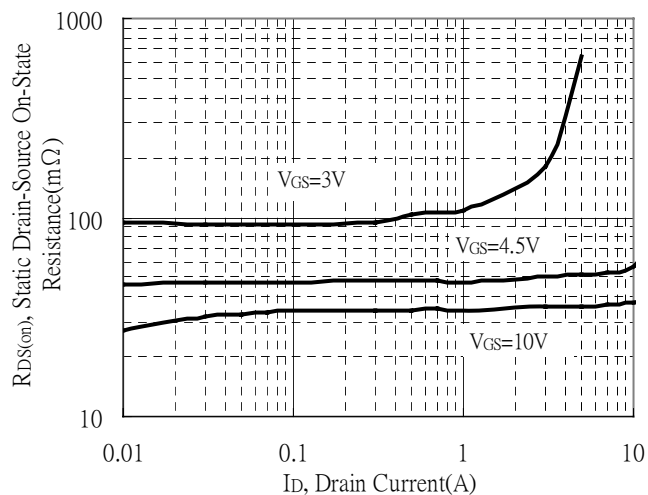
Typical Output Characteristics



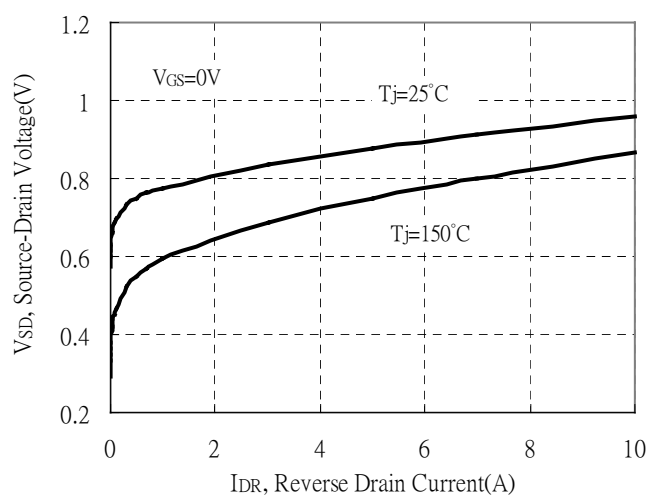
Breakdown Voltage vs Ambient Temperature



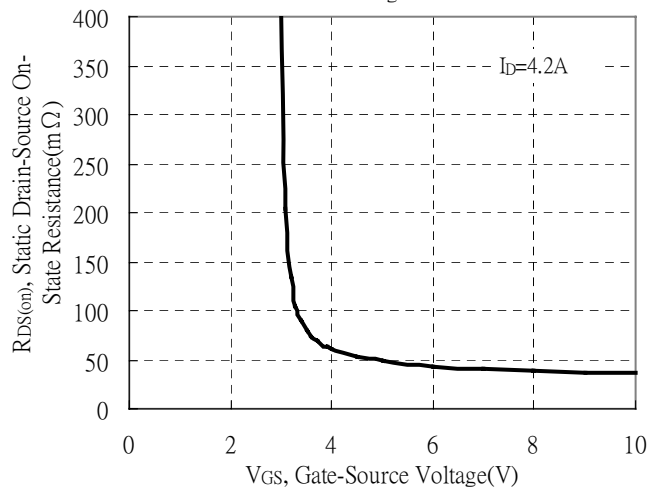
Static Drain-Source On-State resistance vs Drain Current



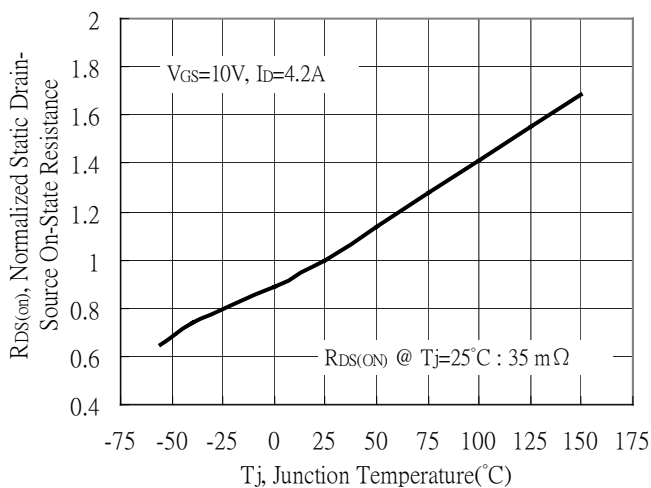
Reverse Drain Current vs Source-Drain Voltage



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

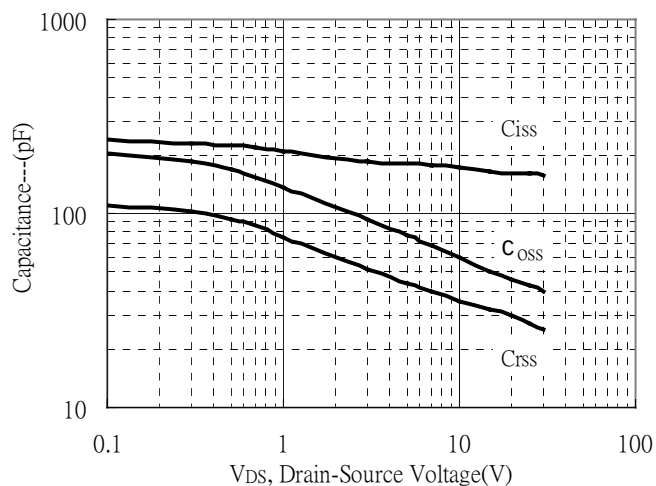


Drain-Source On-State Resistance vs Junction Temperature

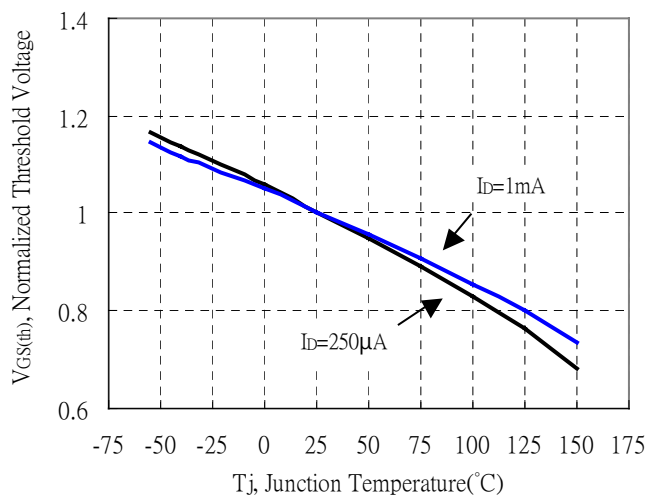


Typical Characteristics(Cont.)

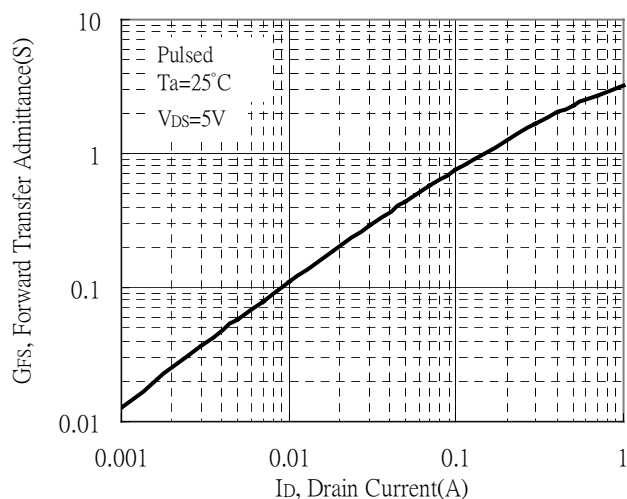
Capacitance vs Drain-to-Source Voltage



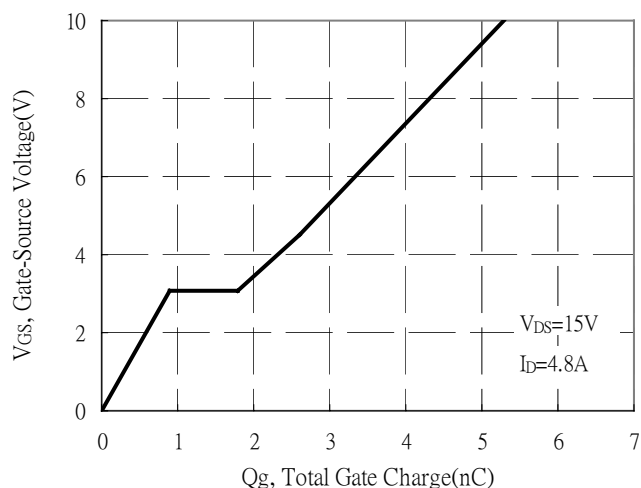
Threshold Voltage vs Junction Temperature



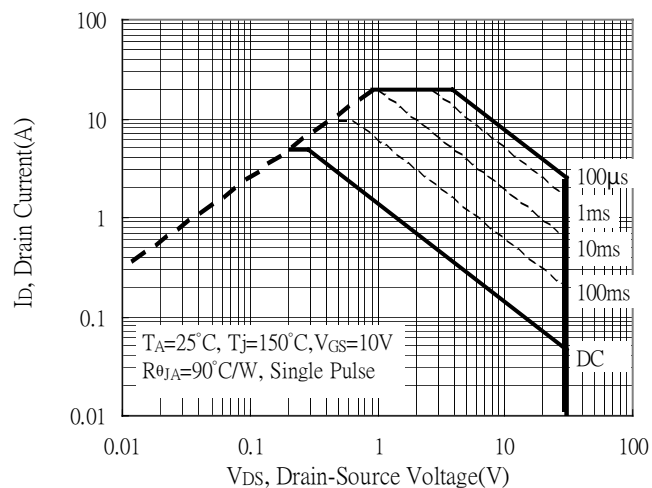
Forward Transfer Admittance vs Drain Current



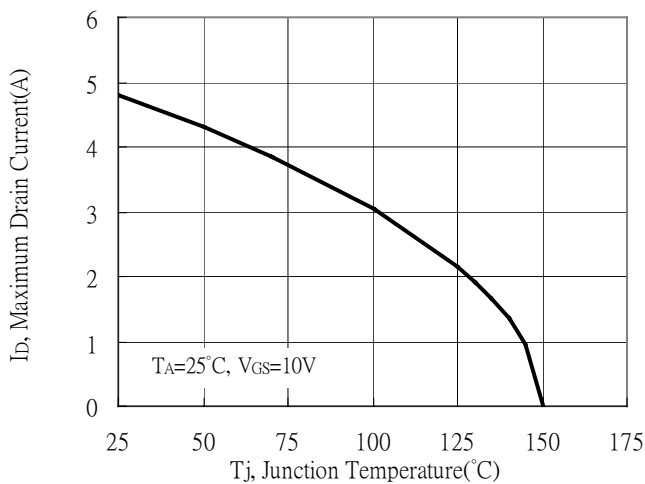
Gate Charge Characteristics



Maximum Safe Operating Area

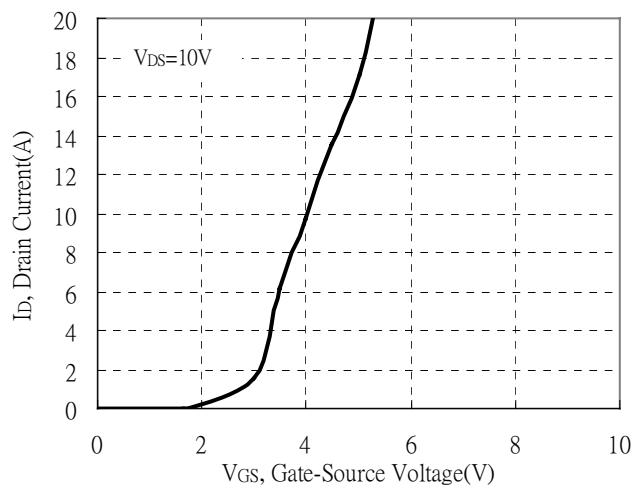


Maximum Drain Current vs Junction Temperature

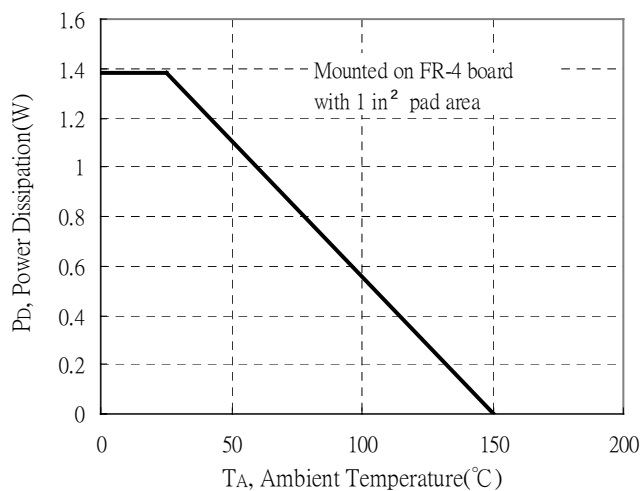


Typical Characteristics(Cont.)

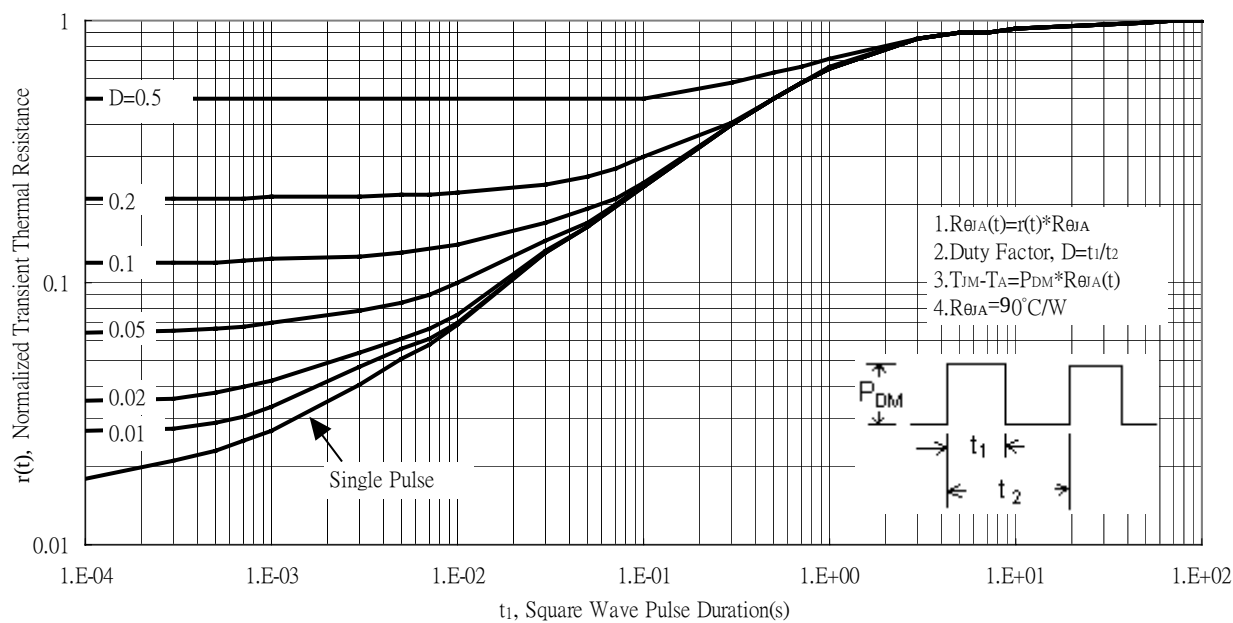
Typical Transfer Characteristics



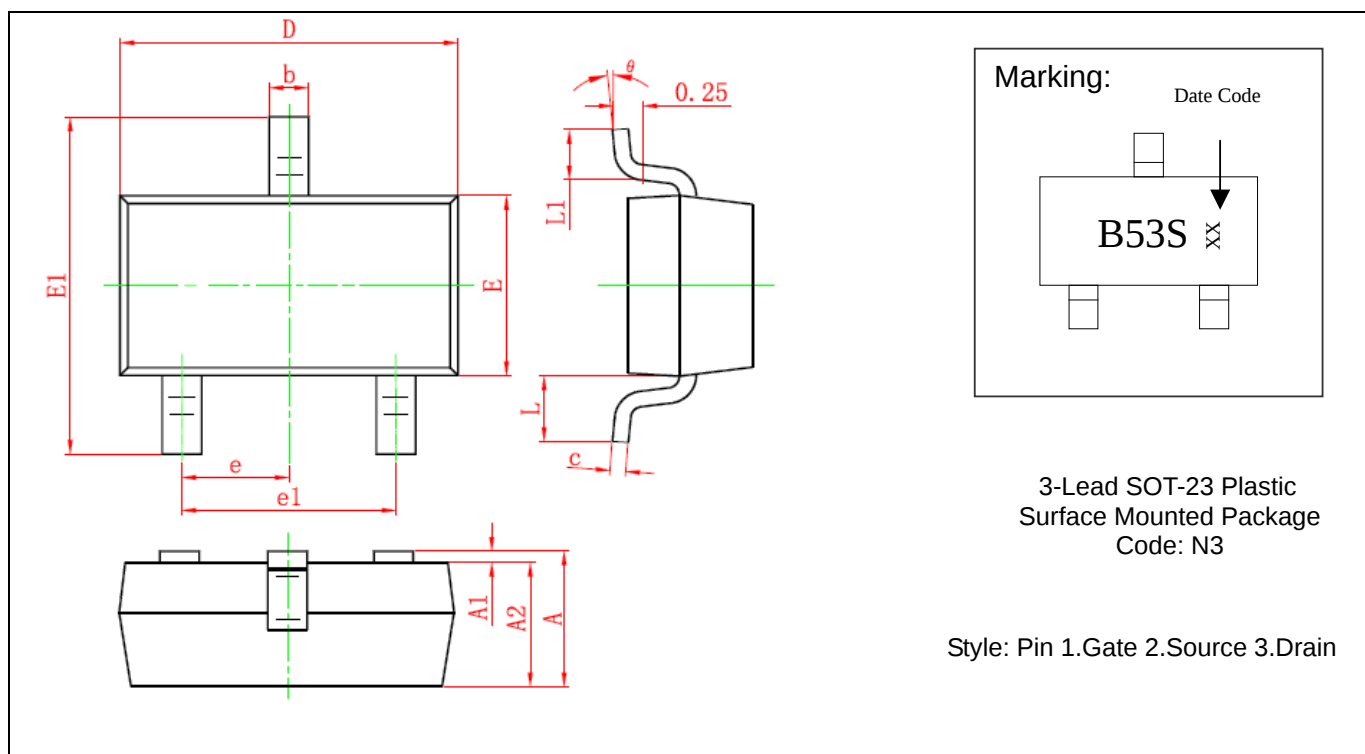
Power Derating Curve



Transient Thermal Response Curves



SOT-23 Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045	E1	2.250	2.550	0.089	0.100
A1	0.000	0.100	0.000	0.004	e	0.950	TYP	0.037	TYP
A2	0.900	1.050	0.035	0.041	e1	1.800	2.000	0.071	0.079
b	0.300	0.500	0.012	0.020	L	0.550	REF	0.022	REF
c	0.080	0.150	0.003	0.006	L1	0.300	0.500	0.012	0.020
D	2.800	3.000	0.110	0.118	θ	0°	8°	0°	8°
E	1.200	1.400	0.047	0.055					