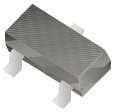
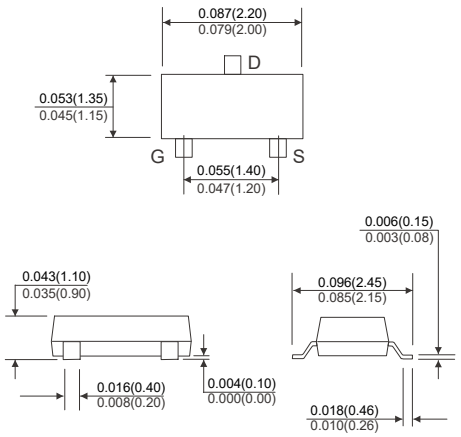
CMSP1013V3-HF

P-Channel
RoHS Device
Halogen Free



$V_{(BR)DSS}$	$R_{DS(on)}$ Typ	I_D
-20V	0.64Ω @ -4.5V	-540mA
	1.1Ω @ -2.5V	
	1.9Ω @ -1.8V	

SOT-323



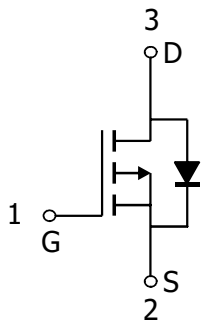
Dimensions in inches and (millimeter)

Features

- Very low level gate drive requirements allowing direct operation in 3V circuits. $V_{GS(th)}$ <1.2V.
- Compact industrial standard SOT-323 surface mount package.
- ESD protected gate
- Pb-free lead plating and halogen-free package.

Circuit diagram

1 G : Gate
2 S : Source
3 D : Drain



Maximum Ratings (at Ta=25 °C unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	
Continuous Drain Current @ T_A =25 ℃, V_{GS}=4.5V	I_D	-0.54	A
Pulsed Drain Current (Note 1)	I_{DM}	-1.5	
Maximum Power Dissipation @ T_A=25℃ (Note 2)	P_D	350	mW
Thermal Resistance, Junction-to-Ambient	$R_{th,ja}$	357	°C/W
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C

Note : 1. Pulse width≤10 μs, duty cycle≤ 2%.
2. Surface mounted on 1 in² copper pad of FR-4 board, t ≤ 5s.

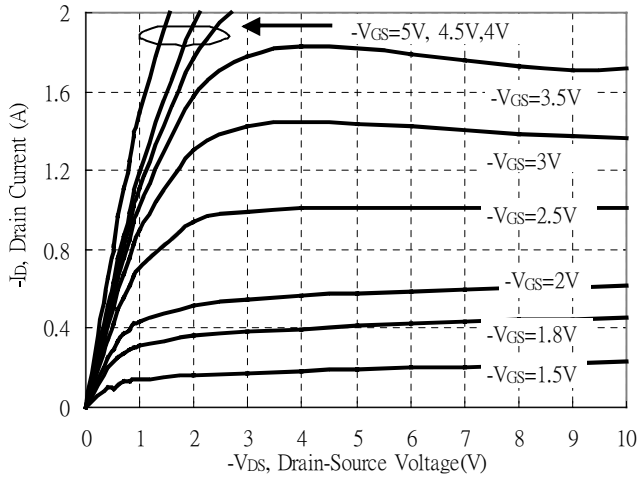
Electrical Characteristics (at T_A=25°C unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-20	-	-	V	V_{GS} =0V, I_D =-250μA
$V_{GS(th)}$	-0.5	-0.8	-1.2	V	V_{DS} =V_{GS},I_D=-250μA
G_{FS}	-	0.5	-	S	V_{DS} =-10V,I_D=-200mA
I_{GSS}	-	-	±10	μA	V_{GS} =±10V,V_{DS}=0V
I_{DSS}	-	-	-1		V_{DS} =-20V,V_{GS} =0V
	-	-	-10		V_{DS} =-20V,V_{GS}=0V, Tj=55°C
*$R_{DS(ON)}$	-	0.64	0.9	Ω	V_{GS} =-4.5V,I_D=-430mA
	-	0.68	0.9		V_{GS} =-4V,I_D=-300mA
	-	1.1	1.4		V_{GS} =-2.5V,I_D=-300mA
	-	1.9	2.7		V_{GS} =-1.8V,I_D=-150mA
Dynamic					
Ciss	-	59	-	pF	V_{DS}=-10V, V_{GS}=0V, f=1MHz
Coss	-	21	-		
Crss	-	15	-		
*$t_{d(ON)}$	-	5	-	ns	V_{DS}=-6V, I_D=-500mA, V_{GS}=-4.5V, R_G=50Ω
*t_r	-	6	-		
*$t_{d(OFF)}$	-	42	-		
*t_f	-	14	-		
*Qg	-	1.2	-	nC	V_{DS}=-5V, I_D=-250mA, V_{GS}=-4.5V
*Qgs	-	0.38	-		
*Qgd	-	0.23	-		
Source-Drain Diode					
*I_S	-	-	-0.54	A	
*I_{SM}	-	-	-1.5		
*V_{SD}	-	-0.77	-1.2	V	V_{GS}=0V, I_S=-100mA

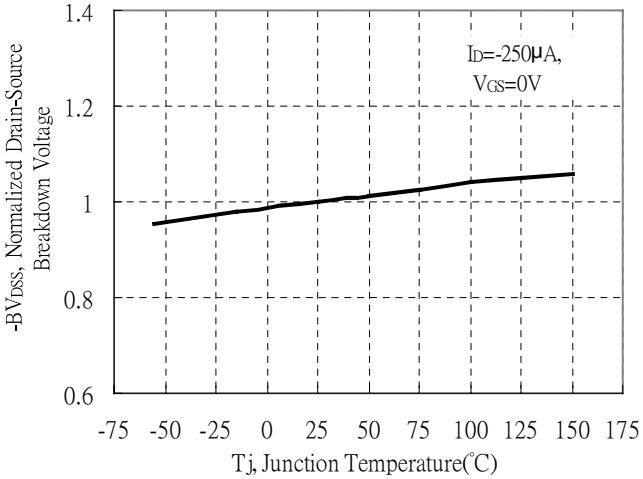
*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤ 2%.

Typical Characteristics

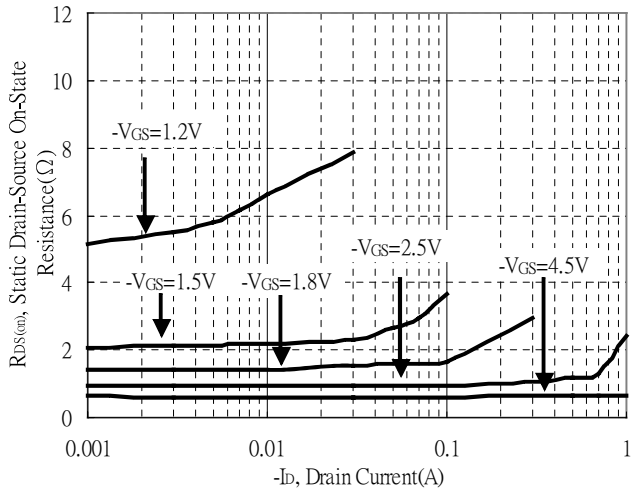
Typical Output Characteristics



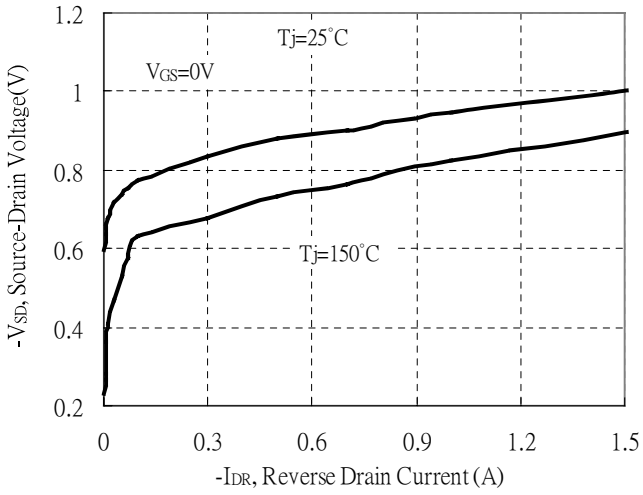
Brekdown Voltage vs Ambient Temperature



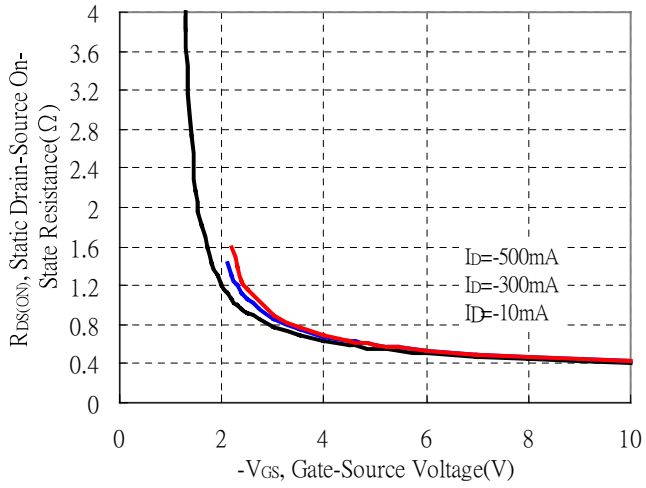
Static Drain-Source On-State resistance vs Drain Current



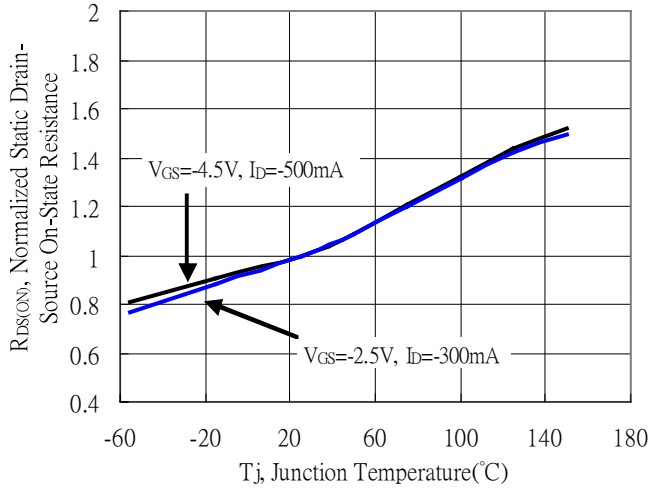
Reverse Drain Current vs Source-Drain Voltage



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

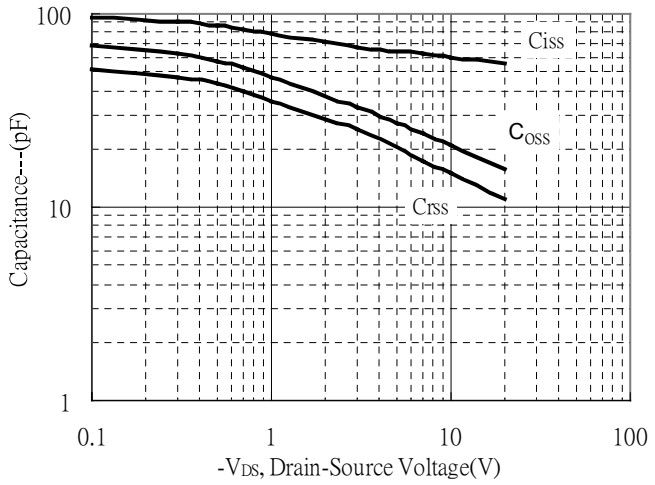


Drain-Source On-State Resistance vs Junction Tempearture

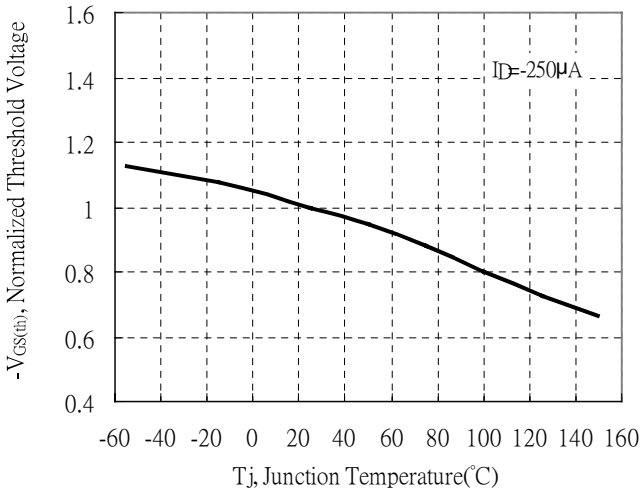


Typical Characteristics(Cont.)

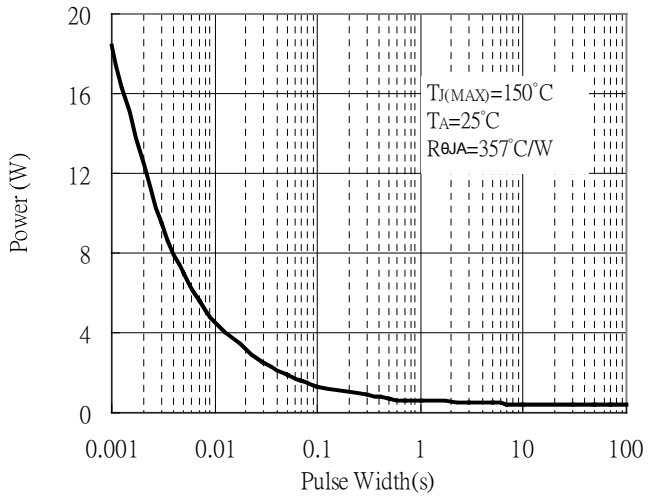
Capacitance vs Drain-to-Source Voltage



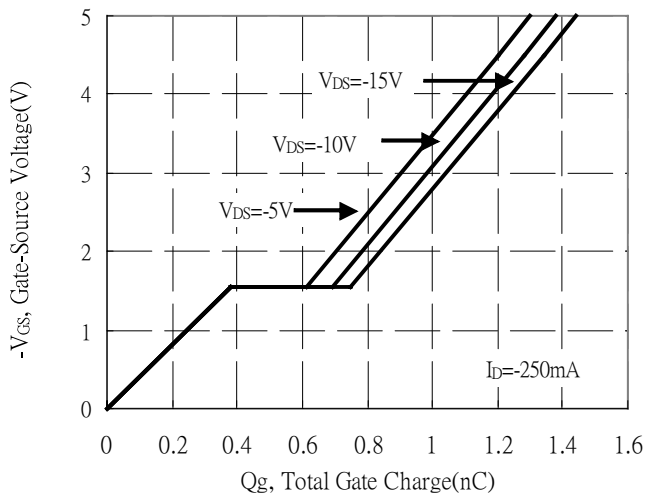
Threshold Voltage vs Junction Tempearture



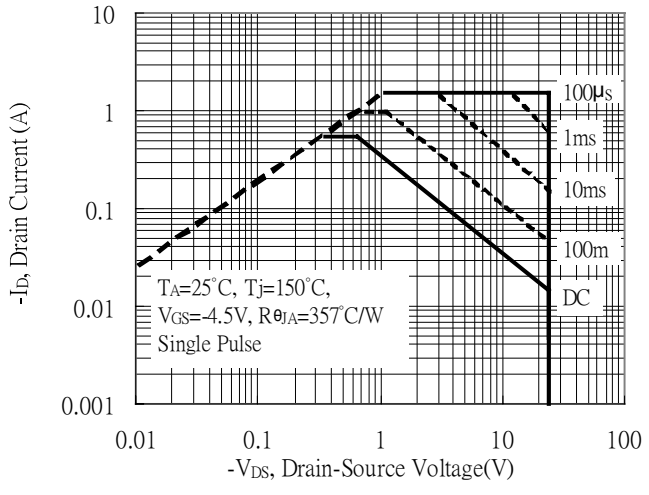
Single Pulse Power Rating, Junction to Ambient



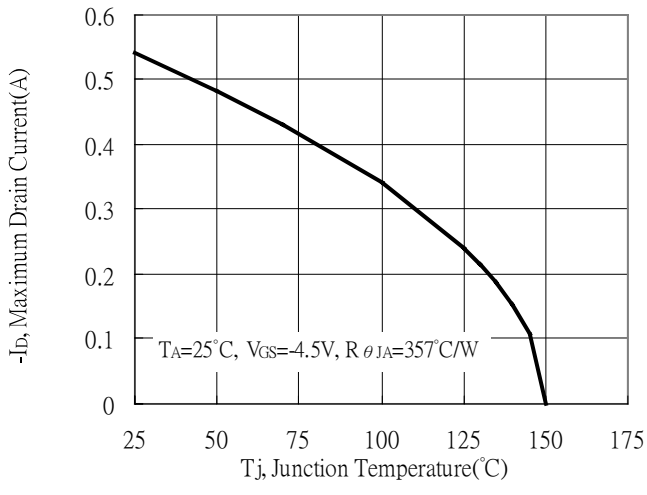
Gate Charge Characteristics



Maximum Safe Operating Area

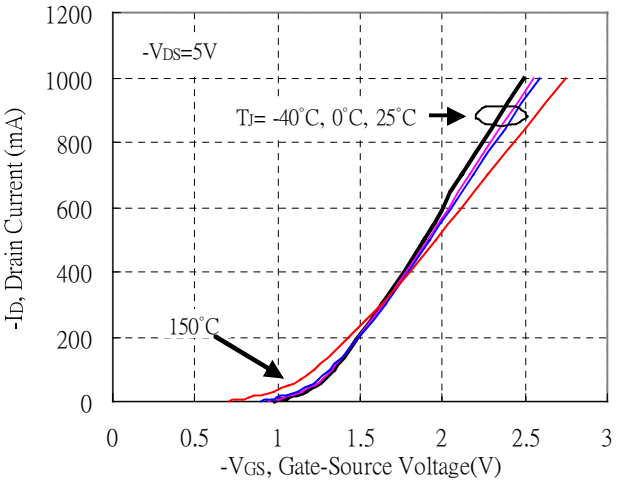


Maximum Drain Current vs JunctionTemperature

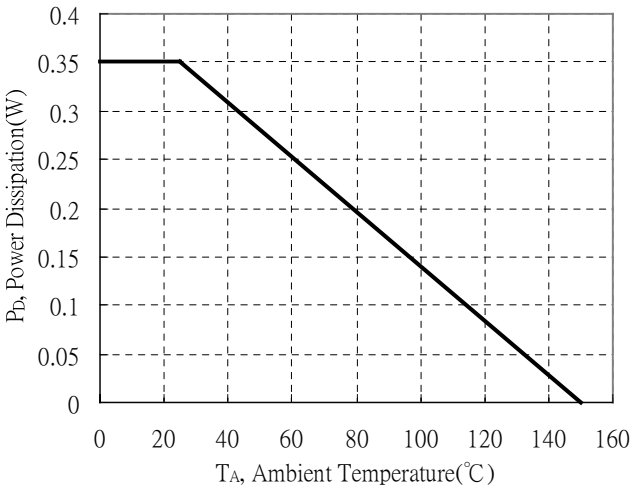


Typical Characteristics(Cont.)

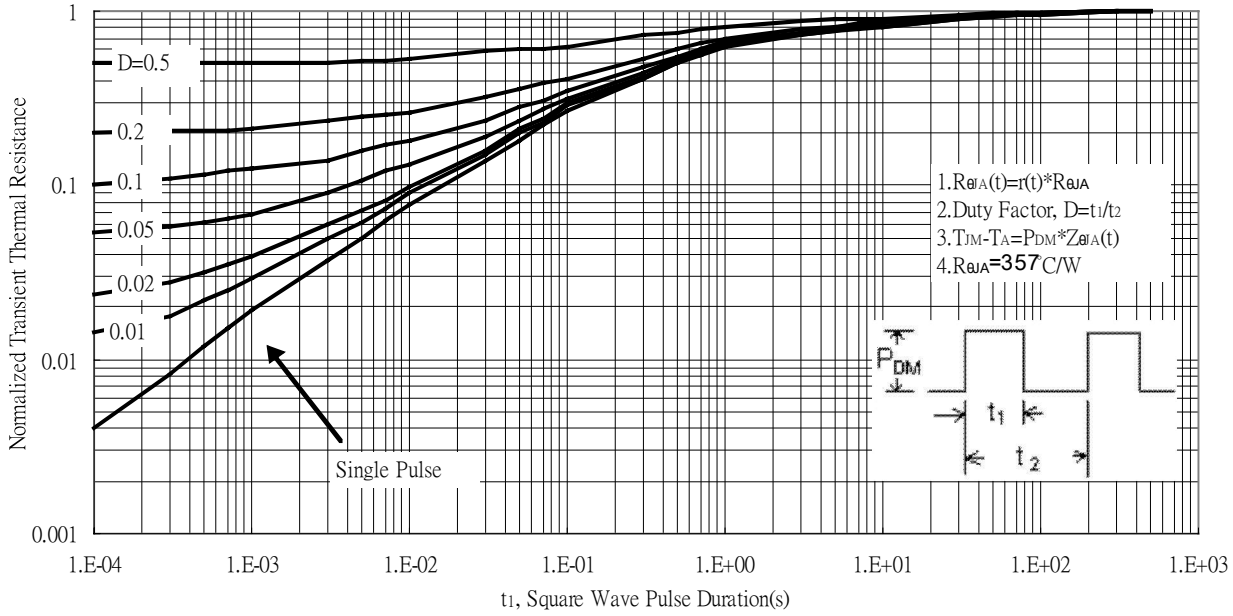
Typical Transfer Characteristics



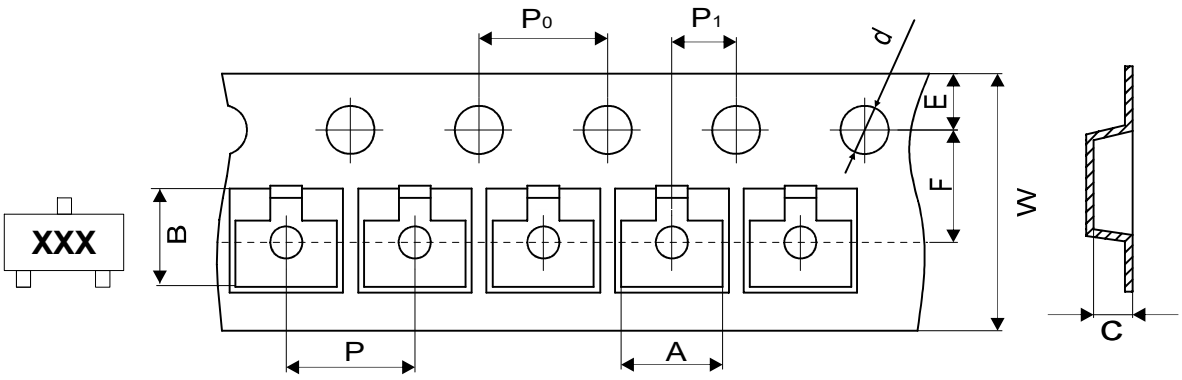
Power Derating Curve

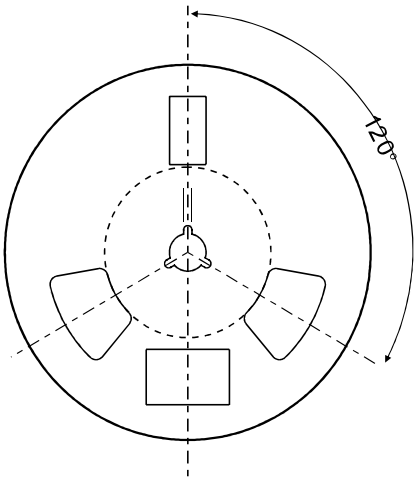


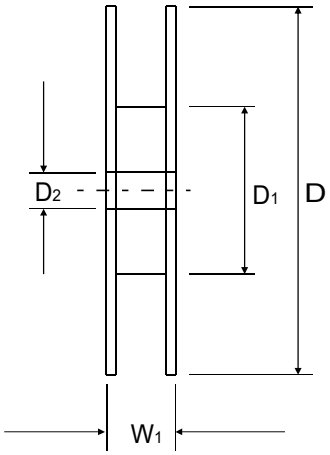
Transient Thermal Response Curves

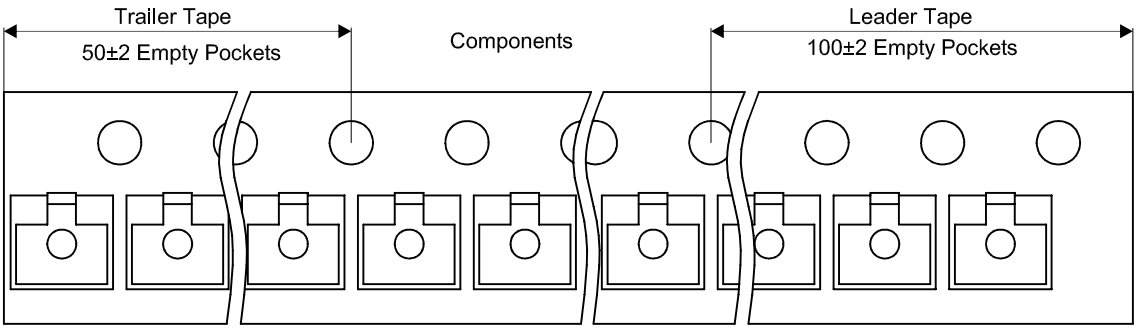


Reel Taping Specification







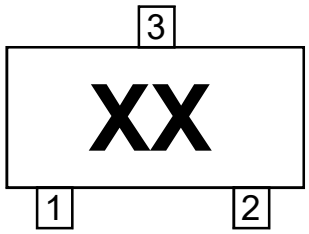


	SYMBOL	A	B	C	d	D	D1	D2
SOT-323	(mm)	2.25 ± 0.05	2.55 ± 0.05	1.19 ± 0.05	1.55 ± 0.10	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.089 ± 0.002	0.100 ± 0.002	0.047 ± 0.002	0.061 ± 0.004	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-323	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30/-0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012/-0.004	0.484 ± 0.039

Marking Code

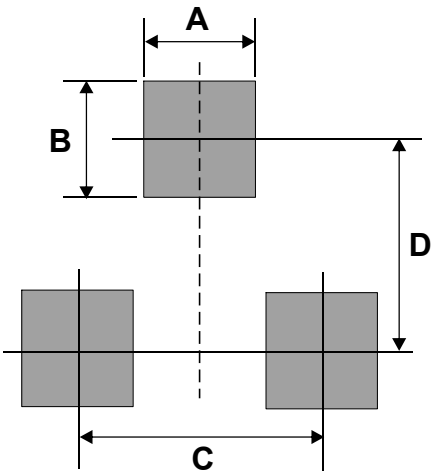
Part Number	Marking Code
CMSP1013V3-HF	TW



xx = Product type marking code

Suggested PAD Layout

SIZE	SOT-323	
	(mm)	(inch)
A	0.50	0.020
B	0.80	0.031
C	1.30	0.012
D	2.20	0.087



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-323	3,000	7