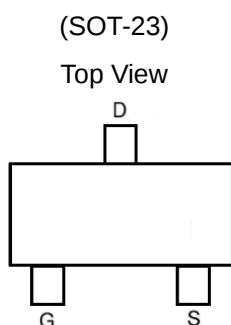


GENERAL DESCRIPTION

The ME2323DS-G is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION



Ordering Information: ME2323DS (Pb-free)

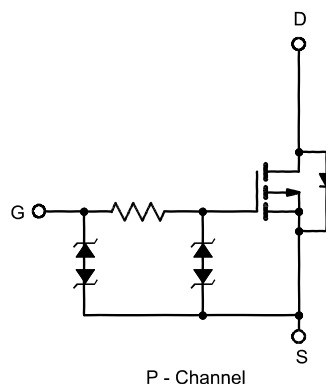
ME2323DS-G (Green product-Halogen free)

FEATURES

- $R_{DS(ON)} \leq 50m\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} \leq 65m\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} \leq 75m\Omega @ V_{GS} = -1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current*	$T_A = 25^\circ C$	I_D	-4.2	A
	$T_A = 70^\circ C$		-3.3	
Pulsed Drain Current		I_{DM}	-17	A
Maximum Power Dissipation*	$T_A = 25^\circ C$	P_D	1.4	W
	$T_A = 70^\circ C$		0.9	
Operating Junction Temperature		T_J	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	90	$^\circ C/W$

* The device mounted on 1in² FR4 board with 2 oz copper

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Electrical Characteristics (T_A=25°C Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250 μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250 μA	-0.25	-0.5	-1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±4.5V			±5	μA
		V _{DS} =0V, V _{GS} =±8V			±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	μA
R _{DS(ON)}	Drain-Source On-Resistance ^a	V _{GS} =-4.5V, I _D = -4.0A		45	50	mΩ
		V _{GS} =-2.5V, I _D = -3.0A		52	65	
		V _{GS} =-1.8V, I _D = -2.0A		60	75	
V _{SD}	Diode Forward Voltage	I _S =-1.0A, V _{GS} =0V		-0.78	-1	V
DYNAMIC						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-4A		10.5		nC
Q _{gs}	Gate-Source Charge			0.5		
Q _{gd}	Gate-Drain Charge			3		
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz		220		pF
C _{oss}	Output Capacitance			95		
C _{rss}	Reverse Transfer Capacitance			30		
t _{d(on)}	Turn-On Delay Time	V _{DS} =-10V, R _L =2.5Ω R _{GEN} =3Ω, V _{GS} =-4.5V		560		ns
t _r	Turn-On Rise Time			4000		
t _{d(off)}	Turn-Off Delay Time			400		
t _f	Turn-Off Fall Time			4000		

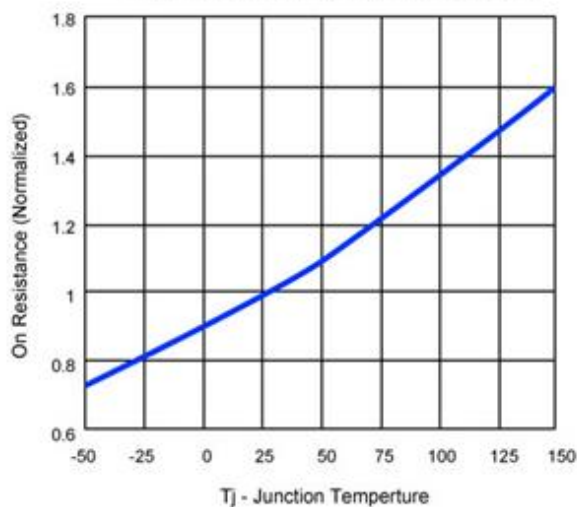
Notes: a. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%, Guaranteed by design, not subject to production testing.

b. Force mos reserves the right to improve product design, functions and reliability without notice.

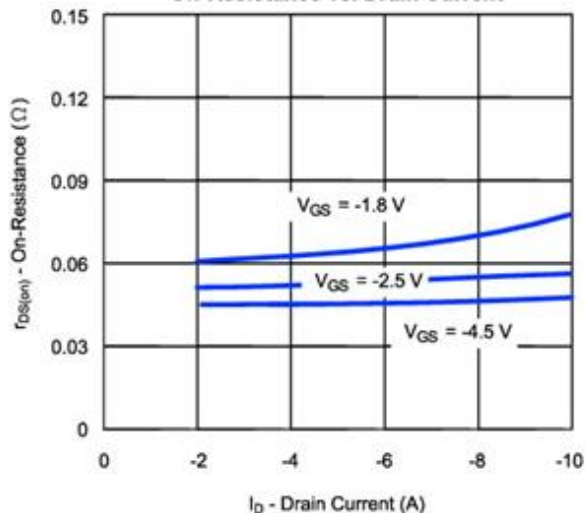


Typical Characteristics (T_J = 25°C Noted)

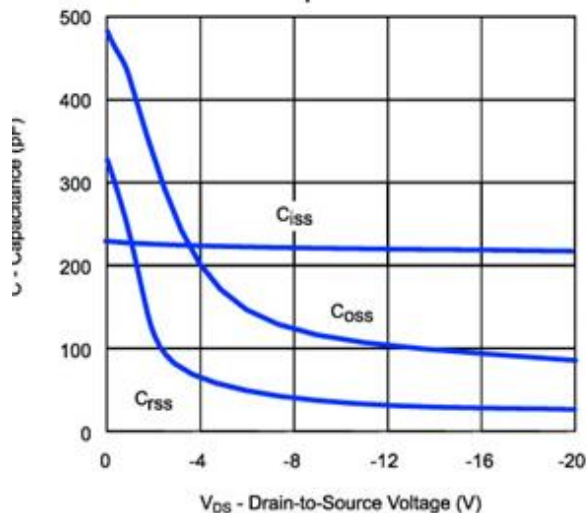
On Resistance vs. Junction Temperature



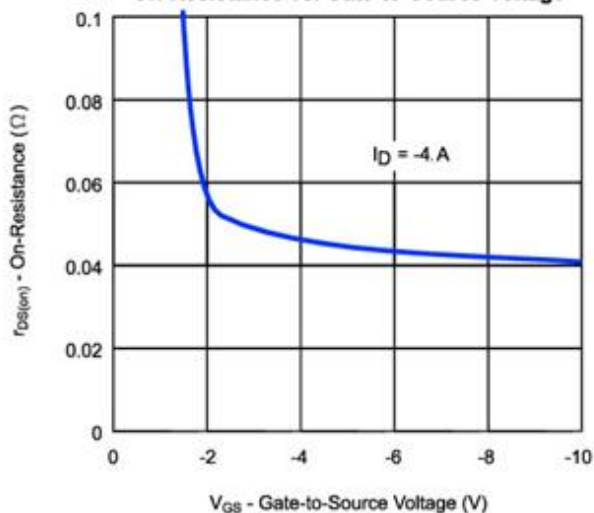
On-Resistance vs. Drain Current



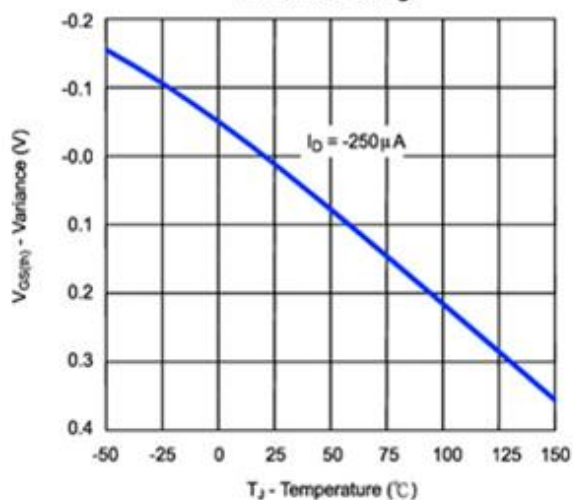
Capacitance



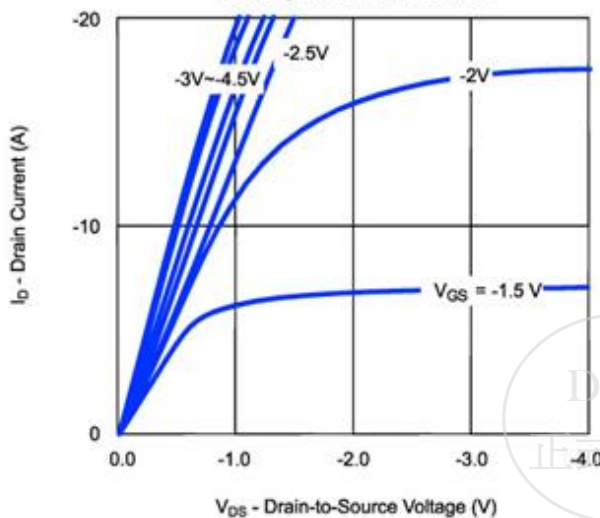
On-Resistance vs. Gate-to-Source Voltage



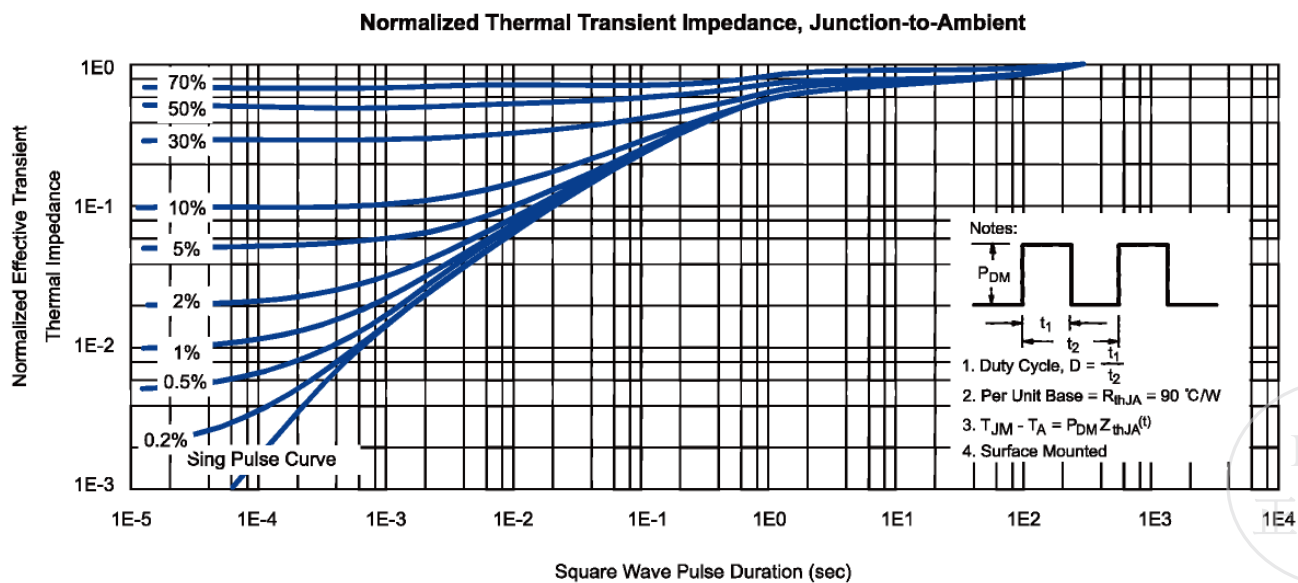
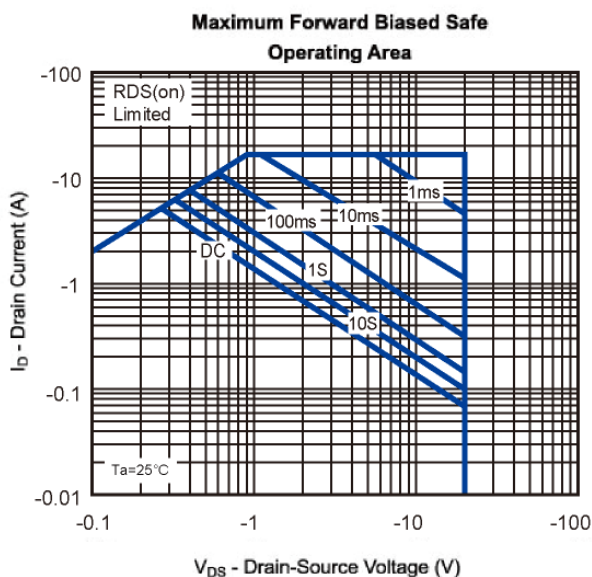
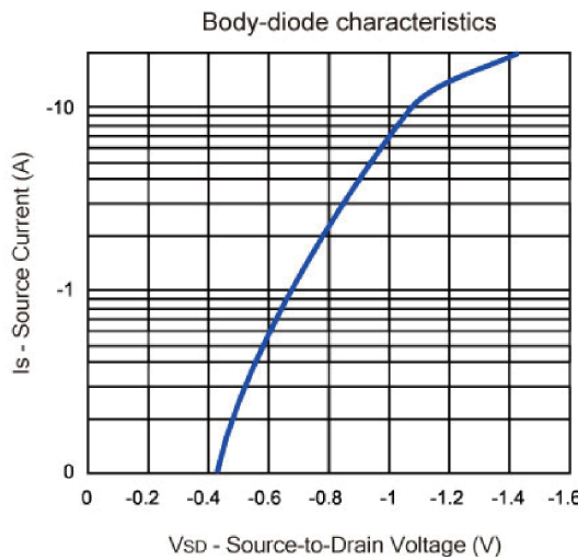
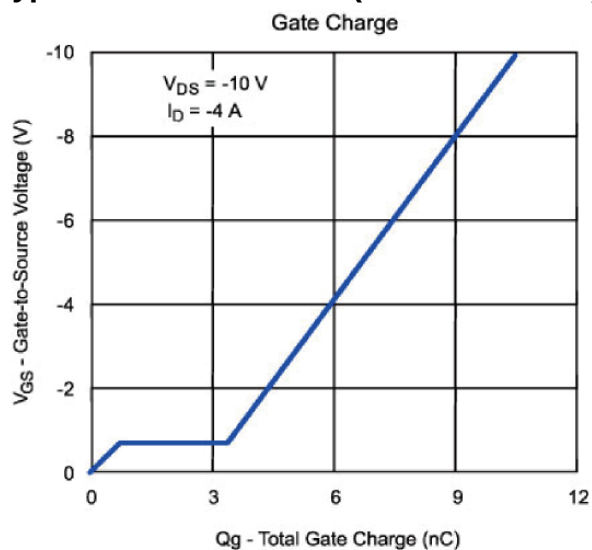
Threshold Voltage



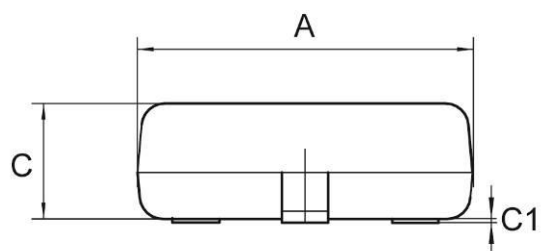
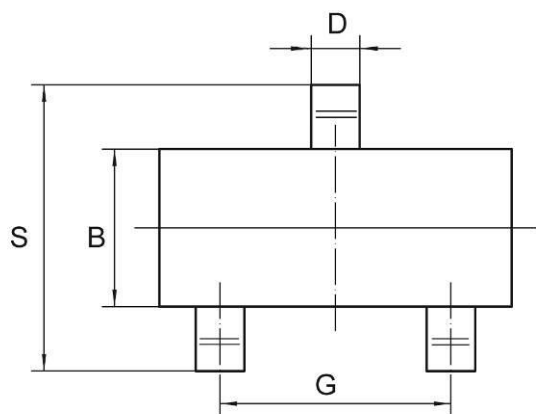
On-Region Characteristics



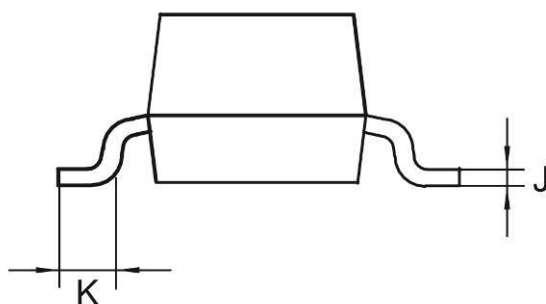
Typical Characteristics (T_J =25°C Noted)



Small SOT-23 Package Outline



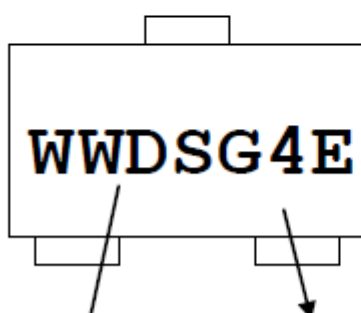
Symbol	MILLIMETERS	
	MIN	MAX
A	2.8	3.0
B	1.2	1.4
C	0.9	1.1
C1	-	0.1
D	0.3	0.5
G	1.90 REF	
J	0.05	0.15
K	0.2	-
S	2.2	2.6



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Device Name: ME2323DS-G series

Package: Small SOT-23



D/C :

4E is the sequence of "0-9" & "A~Z"

0~9 shown on the 6th position on ---2010~2019

A~Z shown on the 6th position on ---2020~2045

A~Z shown on the 7th position on ---1week~26week

A~Z shown on the 7th position on ---27week~52week

P/N :

WWD SG is ME2323DS-G

"WWD S" shown on the 1st~4th position on --- ME2323DS

"G" shown on the 5th position on --- Green product-Halogen free

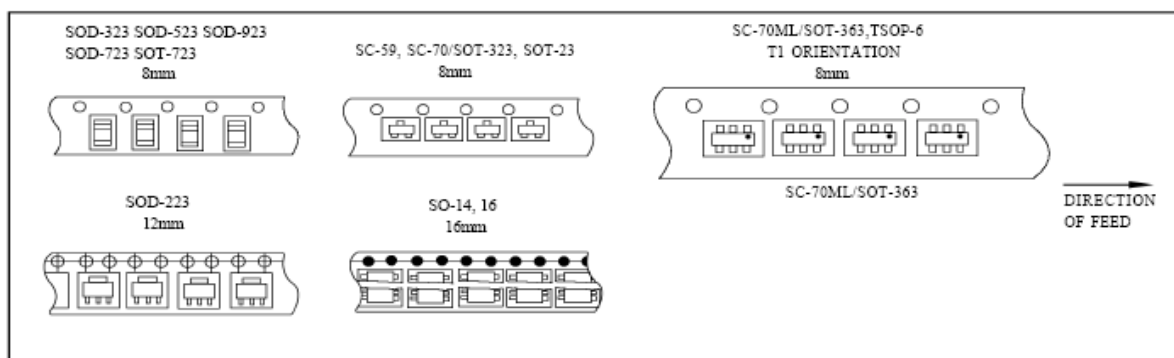
DCC
正式發行

TAPE AND REEL SPECIFICATIONS AND PACKAGING SPECIFICATIONS

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the "peel - back" cover tape.

- Two Reel Sizes Available (7" and 13")
- Used for Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481, -1, -2
- SOD - 123, SC - 59, SC - 70 / SOT - 323, SC -70ML / SOT -363, SOT- 23, TSOP - 6, SOD - 323 SOD - 523 ,SOD-923, SOT- 723, SOD - 723 in 8 mm Tape
- SOT - 223 in 12 mm Tape
- SO - 14, SO -16 in 16 mm Tape

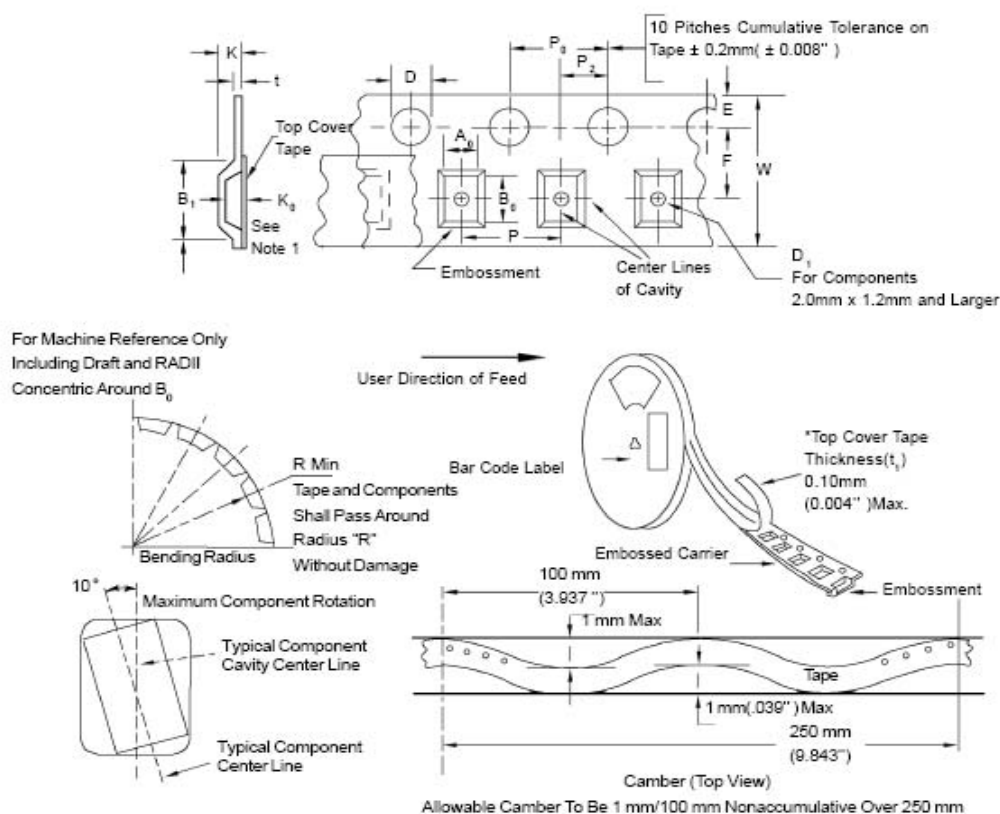
Use the standard device title and add the required suffix as listed in the option table on the following page. Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity.



EMBOSSED TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Pitch mm (inch)	Reel Size mm (inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
SC-59	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
SC-70	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
SOT-323	8	4.0 ± 0.1 (.157 ± .004)	330 (13)	10,000	T3
SO-14	16	8.0 ± 0.1 (.315 ± .004)	178 (7)	500	R1
	16	8.0 ± 0.1 (.315 ± .004)	330 (13)	2,500	R2
SO-16	16	8.0 ± 0.1 (.315 ± .004)	178 (7)	500	R1
	16	8.0 ± 0.1 (.315 ± .004)	330 (13)	2,500	R2
SOD-123	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
	8	4.0 ± 0.1 (.157 ± .004)	330 (13)	10,000	T3
SOT-23	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
	8	4.0 ± 0.1 (.157 ± .004)	330 (13)	10,000	T3
SOT-223	12	8.0 ± 0.1 (.315 ± .004)	178 (7)	1,000	T1
	12	8.0 ± 0.1 (.315 ± .004)	330 (13)	4,000	T3
SC-70ML	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
SOT-363	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T2
TSOP-6	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
SOD-323 SOD-523	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	3,000	T1
SOD-923	8	2.0 ± 0.1 (.079 ± .004)	178 (7)	8,000	T5
SOT-723	8	4.0 ± 0.1 (.157 ± .004)	178 (7)	4,000	T1
SOD-723	8	2.0 ± 0.1 (.079 ± .004)	178 (7)	8,000	T5

EMBOSSED TAPE AND REEL DATA FOR DISCRETES CARRIER TAPE SPECIFICATIONS



DIMENSIONS

Tape Size	B_1 Max	D	D_1	E	F	K	P_0	P_2	RMin	TMax	WMax
8mm	4.55mm (.179")	1.5±0.1mm - 0.0	1.0Min (.039")	1.75±0.1mm (.069±.004)	3.5±0.05mm (.138±.002")	2.4mmMax (.094")	4.0±0.1mm (.157±.004")	2.0±0.1mm (.079±.002")	25mm (.98")	0.6mm (.024")	8.3mm (.327")
12mm	8.2mm (.323")	(.059±.004") - 0.0	1.5mmMin (.060")		5.5±0.05mm (.217±.002")	6.4mmMax (.252")			30mm (1.18")		12±.30mm (.470±.012")
16mm	12.1mm (.476")				7.5±0.10mm (.295±.004")	7.9mmMax (.311")					16.3mm (.642")
24mm	20.1mm (.791")				11.5±0.1mm (.453±.004")	11.9mmMax (.468")					24.3mm (.957")

Metric dimensions govern - English are in parentheses for reference only.

NOTE 1: A_0 , B_0 , and K_0 are determined by component size. The clearance between the components and the cavity must be within .05 mm min. to .50 mm max.

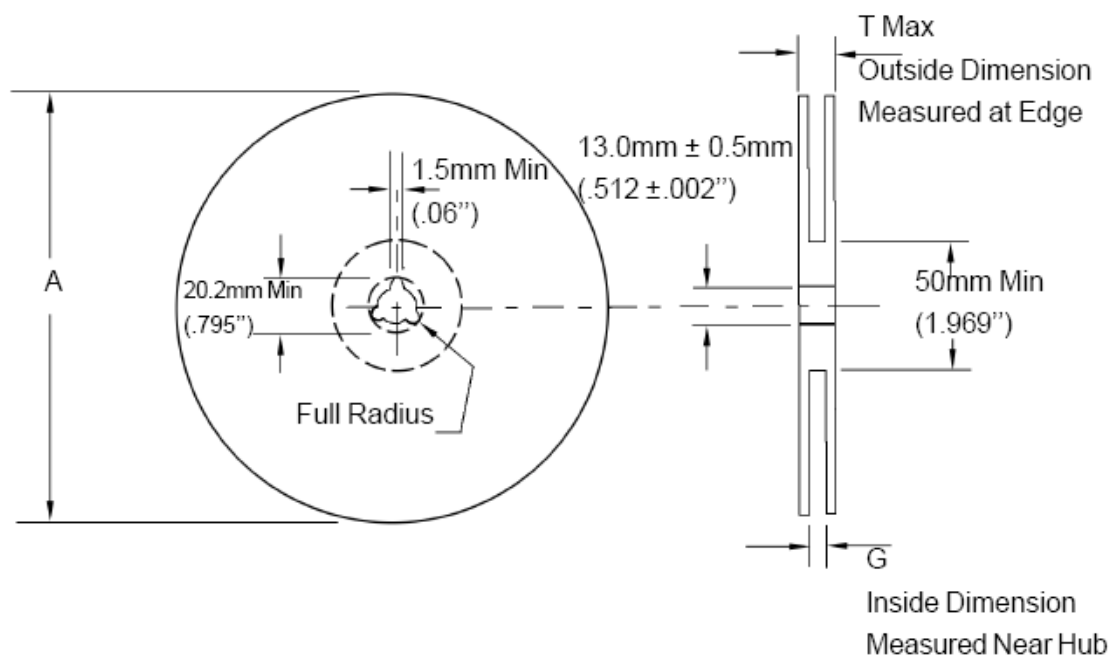
NOTE 2: the component cannot rotate more than 10° within the determined cavity.

NOTE 3: If B_1 exceeds 4.2 mm (.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

NOTE 4: Measure for 50±10 empty pockets at the tape leader using the ruler provided on the machine.

NOTE 5: At the end of counter units the handler will seal 110±10 empty pockets.

EMBOSED TAPE AND REEL DATA FOR DISCRETES CARRIER TAPE SPECIFICATIONS



Size	A Max	G	T Max
8 mm	178.0mm (7.0")	8.4mm+1.5mm, -0.0 (.33"+.039", -0.00)	10.9mm (.43")

Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)

Humidity: 30 to 80 RH (40 to 60 is preferred)

Recommended Period: One year after manufacturing

(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

包裝規範

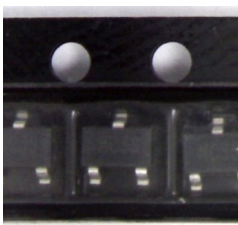
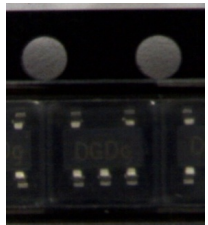
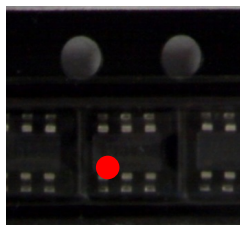
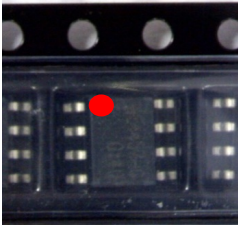
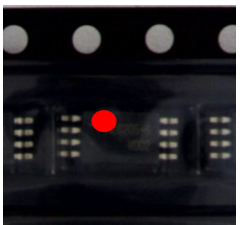
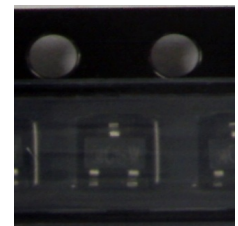
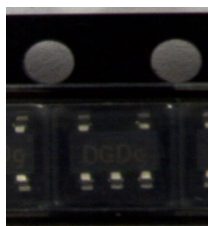
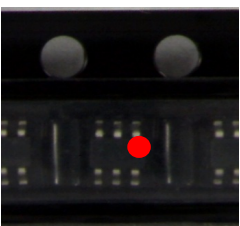
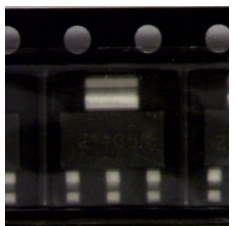
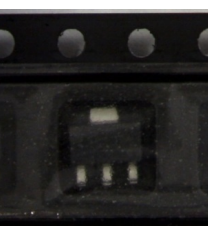
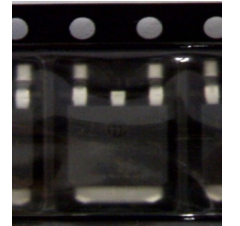
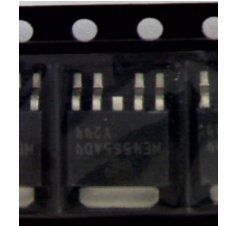
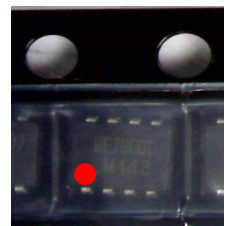
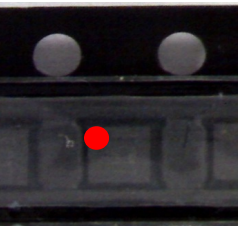
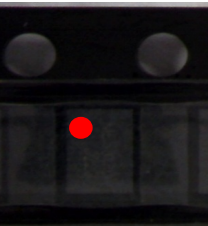
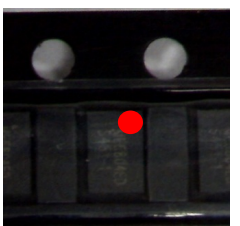
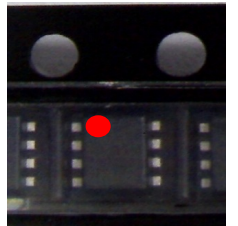
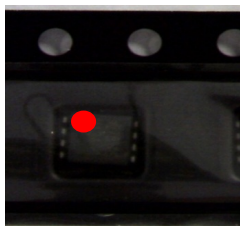
修定日期：2019 年 5 月 9 日

製作者：林 群 杰

文件編號：FM-E003

版本：E

各封裝對應捲盤、數量、零件方向

Package Type	SOT-23 SOT-小23	SOT-25	SOT-26 TSOP-6	SOP-8	TSSOP-8
PIC					
說明	單PIN朝圓孔	雙PIN朝圓孔	PIN1朝圓孔反方向	PIN1朝圓孔方向	PIN1朝圓孔方向
Reel size	7"	7"	7"	13"	13"
數量	3K	3K	3K	2.5K	3K
Package Type	SC-70 3L (SOT-323)	SC-70 5L (SOT-353)	SC-70 6L (SOT-363)	SOT-523	SOT-723
PIC					
說明	單PIN朝圓孔	雙PIN朝圓孔	PIN1朝圓孔方向	單PIN朝圓孔	單PIN朝圓孔
Reel size	7"	7"	7"	7"	7"
數量	3K	3K	3K	3K	8K
Package Type	SOT-223	SOT-89	TO-252-3L	TO-252-4L	J2928
PIC					
說明	單PIN朝圓孔	單PIN朝圓孔	PIN朝圓孔	PIN朝圓孔	PIN1朝圓孔反方向
Reel size	13"	7"	13"	13"	7"
數量	2.5K	1K	2.5K	2.5K	3K
Package Type	DFN2*2	DFN3*2	TDFN2*3	DFN3*3	DFN3.3*3.3
PIC					
說明	PIN1朝圓孔方向	PIN1朝圓孔方向	PIN1朝圓孔方向	PIN1朝圓孔方向	PIN1朝圓孔方向
Reel size	7"	7"	13"	13"	13
數量	3K	3K	3K	3K	3K

包裝規範

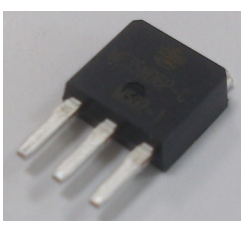
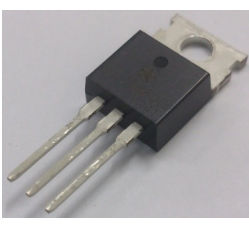
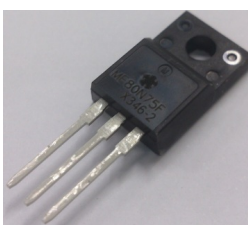
修定日期：2019 年 5 月 9 日

製作者：林 群 杰

文件編號：FM-E003

版本：E

各封裝對應捲盤、數量、零件方向

Package Type	PPAK(DFN) 5*6	TO-251	TO-220	TO-220F	SOT-563
PIC					
說明	PIN1朝圓孔方向				PIN1朝圓孔反方向
Reel size	13"	tube	tube	tube	7"
數量	3K	75 ea	50 ea	50 ea	8K

包裝規範

修定日期：2019 年 5 月 9 日

製作者：林 群 杰

文件編號：FM-E003

版本：E

料帶設定及標籤(Reel)



不併批 Reel 的標籤位置



併批 Reel 的標籤位置

1. 依照各封裝採用對應 Reel。
2. 料帶前空 400mm 以上(含載帶、蓋帶)，後空 160mm 以上(含載帶、蓋帶)。(依照 EIA-481)
3. 所有標籤貼於載帶圓孔相反側，Date code 不併批時，RoHS 標籤需黏貼於力士標籤正下方。
4. 不同料號不可合併。
5. 同料號不同 Date code 可合併，於 Reel 上各貼上併批標籤。
即一個 Reel 中僅可有 2 個 Date code，一個 Date code 僅可合併一次。
併批說明：Date code A 的尾數可跟 Date code B 併批；Date code B 的尾數可跟 Date code C 併批。
但 Date code A 的尾數已經 Date code B 併批，不可再跟 Date code C 併批。

包裝規範

修定日期：2019 年 5 月 9 日

製作者：林 群 杰

文件編號：FM-E003

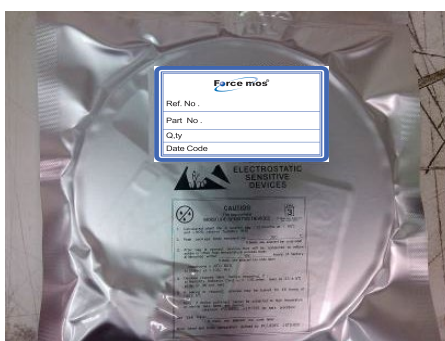
版本：E

真空包裝(Reel)



1. 產品用防靜電袋真空包裝，並抽真空密封；**MSL1 等級除外**。

MSL3 包裝(特別指定)



1. 依照MSL(MSD) 3使用防靜電鋁箔袋(真空靜電袋)=>客戶指定，擺放乾燥劑及濕度指示卡(3或6點)於袋中後，抽真空。(乾燥劑及指示卡須符合綠色產品要求)
2. 防靜電鋁箔袋上須有警示標示。
3. 防靜電鋁箔袋上需貼上產品標籤，內容格式同Reel。

包裝規範

修定日期：2019 年 5 月 9 日

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內箱包裝(Reel)



1. 捲盤(Reel) 7" 一個內箱(Box)裝 5 個 Reel；捲盤(Reel)13" 一個內箱(Box)裝 2 個(Reel)
2. 不拼批時，力士標籤貼於內箱正面右方，RoHS 標籤貼附於力士標籤左方。
3. 不同料號不可合併。
4. 同料號不同 Date code 可合併，一個 Date code 僅可並批一次，於內箱側邊正面貼上併批標籤。

外箱包裝方式(Reel)



1. 7"：一個外箱(Carton)裝 12 個內箱(Box)。13"：一個外箱(Carton)裝 6 個內箱(Box)。
2. 不足數量以空箱或填充物補足，封箱用寬度為 4.8cm 之透明膠帶。
3. 7"：內箱標籤面朝與外箱標籤朝同一方向。13"：內箱標籤面朝上，且需同一方向性。
4. 不拼批時，外箱標籤貼於外箱寬面右上方，RoHS 標籤貼附於外箱標籤左方。
5. 不同料號不可合併。
6. 同料號不同 Date code 可併箱出貨，一個外箱僅限二個 Date code，不同 Date code 的外箱標籤必須分別標示貼附，外箱標籤貼於外箱寬面右上方，依 Date code 順序逐次向下貼附，RoHS 標籤貼附於外箱標籤最上列左方。
7. 外箱標籤上貼透明膠帶，避免標籤油墨因搬運磨擦導致字跡不清。