

N-Channel 60V (D-S) MOSFET, ESD Protection

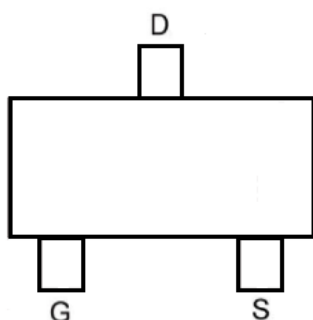
GENERAL DESCRIPTION

The ME2N70023E1-G is the N-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 , and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION

Small SOT-23

Top View

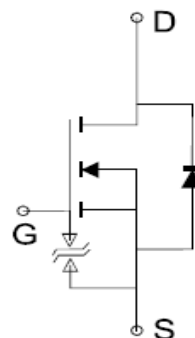


FEATURES

- $R_{DS(ON)} \leq 4\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 4\Omega @ V_{GS}=4.5V$
- ESD Protection HBM $\geq 1KV$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Load Switch
- DSC



N-Channel MOSFET

Ordering Information: ME2N70023E1-G (Green product-Halogen free)

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain	$T_A=25^\circ C$	I_D	0.24	A
	$T_A=70^\circ C$	I_D	0.19	
Pulsed Drain Current		I_{DM}	1	A
Maximum Power Dissipation	$T_A=25^\circ C$	P_D	0.4	W
	$T_A=70^\circ C$	P_D	0.2	
Operating Junction Temperature		T_J	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	350	$^\circ C/W$

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

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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1		2	V
I_{GSS}	Gate-Body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$			± 1	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			1	μA
$R_{DS(on)}$	Drain-Source On-Resistance*	$V_{GS}=10V, I_D=500mA$		2	4	Ω
		$V_{GS}=4.5V, I_D=200mA$		2.3	4	
V_{SD}	Diode Forward Voltage *	$I_S=200mA, V_{GS}=0V$		0.82	1.3	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=30V, V_{GS}=10V, I_D=200mA$		4		nC
Q_g	Total Gate Charge	$V_{DS}=30V, V_{GS}=4.5V, I_D=200mA$		1.9		
Q_{gs}	Gate-Source Charge			2.2		
Q_{gd}	Gate-Drain Charge			0.3		
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		17		pF
C_{oss}	Output Capacitance			2		
C_{rss}	Reverse Transfer Capacitance			1		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V, R_L=60\Omega$ $V_{GS}=10V, R_G=4.7\Omega$ $I_D=500mA$		3.7		ns
t_r	Turn-On Rise Time			21		
$t_{d(off)}$	Turn-Off Delay Time			4.8		
t_f	Turn-Off Fall Time			22.8		

Notes: a, pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$, Guaranteed by design, not subject to production testing.

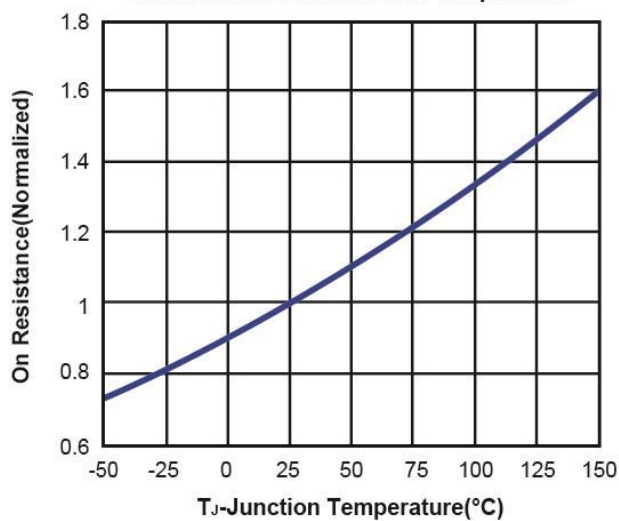
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.



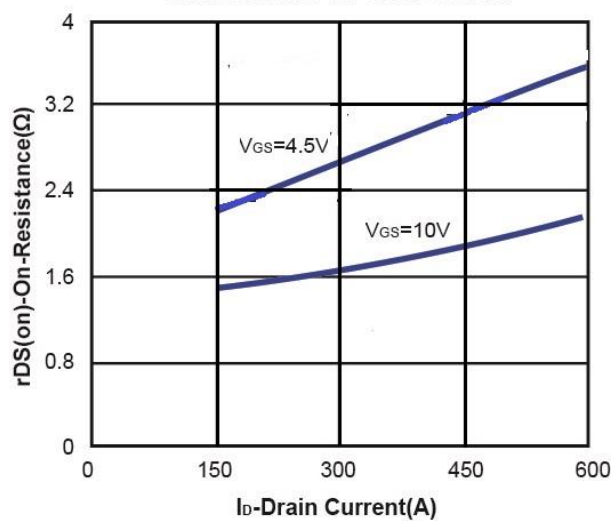
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Typical Characteristics (T_J = 25°C Noted)

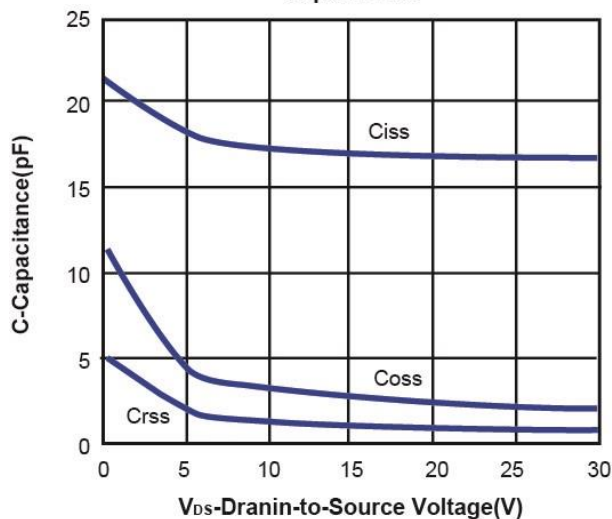
On Resistance vs. Junction Temperature



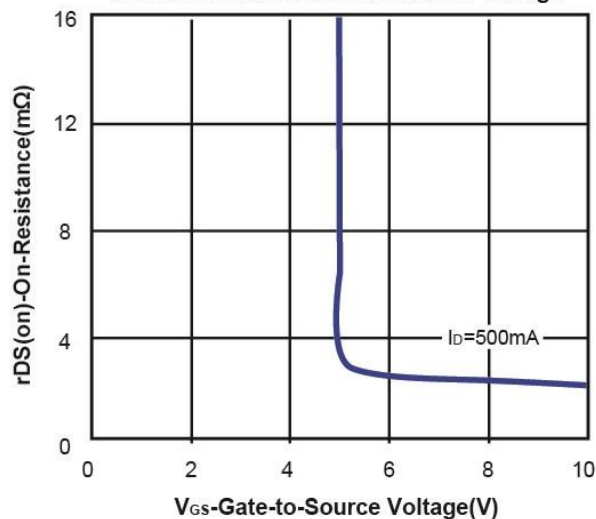
On Resistance vs. Drain Current



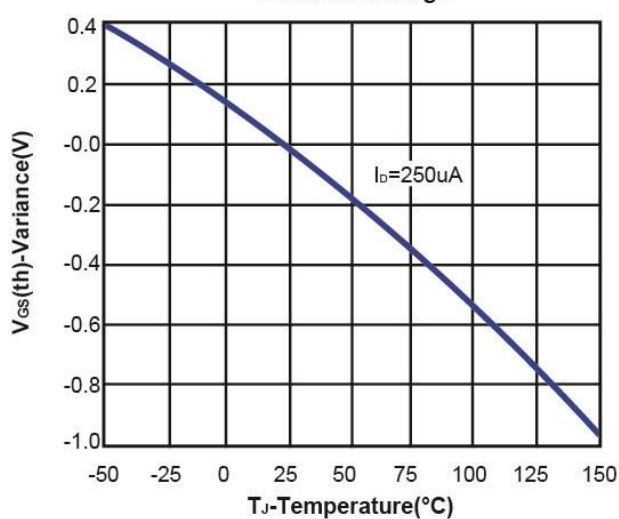
Capacitance



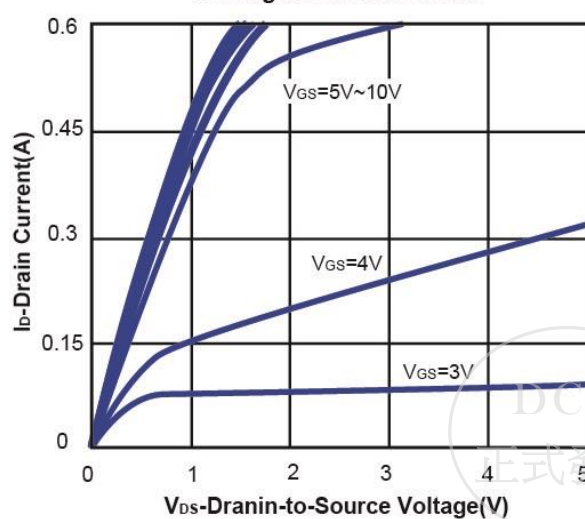
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage

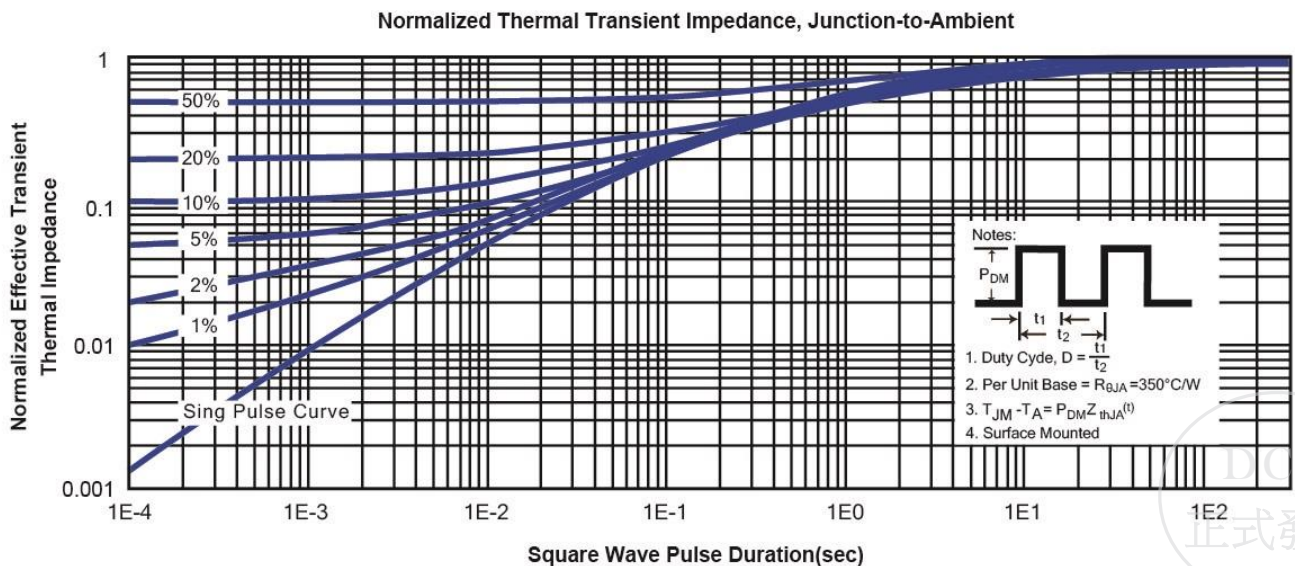
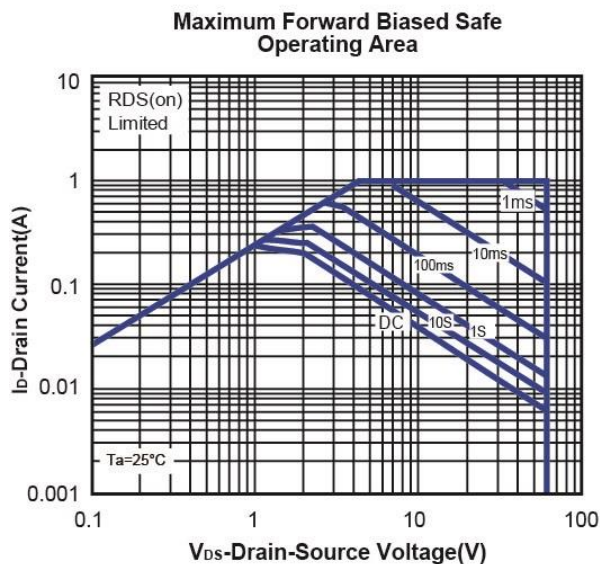
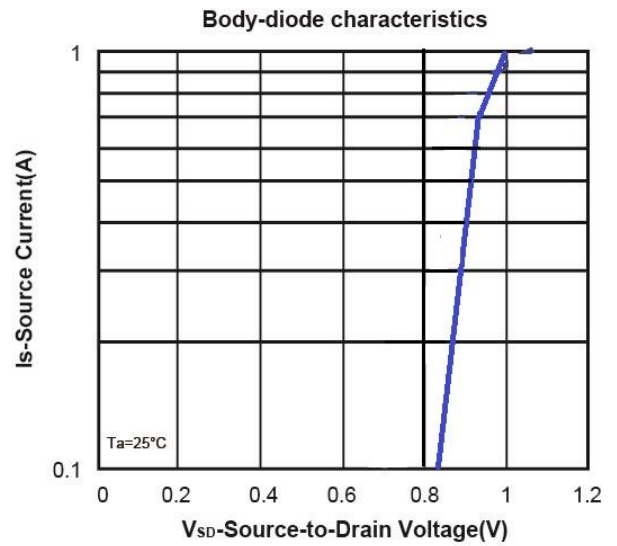
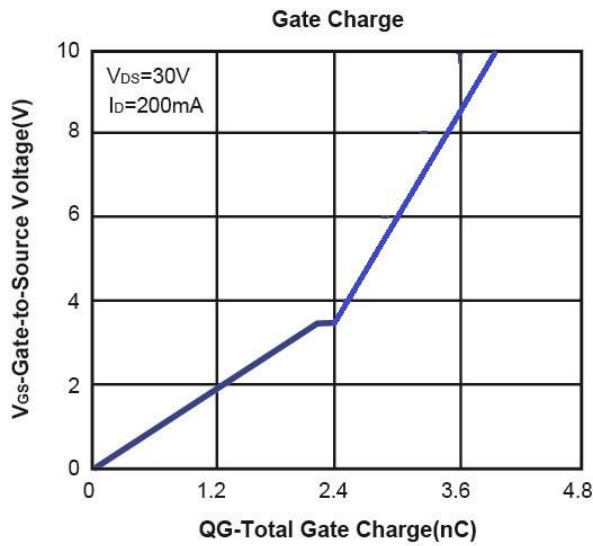


On-Region Characteristics



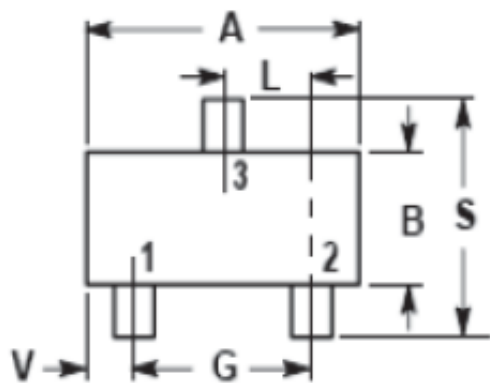
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Typical Characteristics (T_J =25°C Noted)

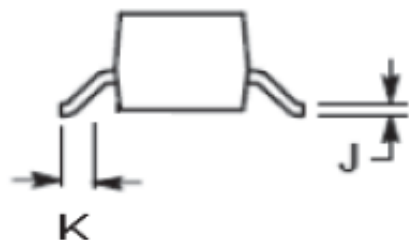
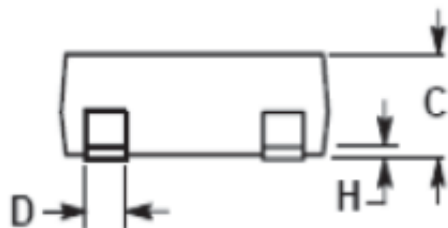


N-Channel 60V (D-S) MOSFET, ESD Protection

Small SOT-23 Package



- NOTES:
- 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - 2. CONTROLLING DIMENSION: INCH.



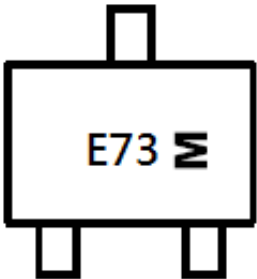
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.5
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.007	—	0.018	—
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

DCC
正式發行

N-Channel 60V (D-S) MOSFET, ESD Protection
Device name: ME2N70023E1-G

Package: SOT-23

Marking Code:



E73: Device Marking Code
M: Date code

MONTH CODE

ODD YEARS(2007,2009)

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

EVEN YEARS(2006,2008)

Jan	E
Feb	F
Mar	H
Apr	J
May	K
Jun	L
Jul	N
Aug	P
Sep	U
Oct	X
Nov	Y
Dec	Z

