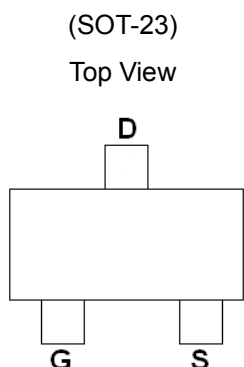


**N-Channel 20V (D-S) MOSFET , ESD Protection**

**GENERAL DESCRIPTION**

The ME2320D 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 where high-side switching and low in-line power loss are needed in a very small outline surface mount package.

**PIN CONFIGURATION**



Ordering Information:ME2320D(Pb-Free)

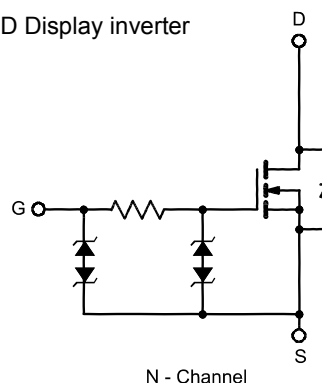
ME2320D-G(Green product-Halogen free)

**FEATURES**

- $R_{DS(ON)}=21m\Omega @V_{GS}=4.5V$
- $R_{DS(ON)}=25 m\Omega @V_{GS}=2.5V$
- $R_{DS(ON)}=40 m\Omega @V_{GS}=1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protection  $HBM \geq 2KV$

**APPLICATIONS**

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



**Absolute Maximum Ratings (TA=25°C Unless Otherwise Noted)**

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	6.4
		$T_A=70^\circ C$	5.1
Pulsed Drain Current	$I_{DM}$	26	A
Maximum Power Dissipation	$P_D$	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	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 1in<sup>2</sup> FR4 board with 2 oz copper

## N-Channel 20V (D-S) MOSFET , ESD Protection

Electrical Characteristics (T<sub>A</sub> = 25°C Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	20			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	0.4		1	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±4.5V			±1	μA
		V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±10	
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
R <sub>DS(ON)</sub>	Drain-Source On-Resistance <sup>a</sup>	V <sub>GS</sub> =4.5V, I <sub>D</sub> = 6.5A		17	21	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> = 5.5A		20	25	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> = 5A		30	40	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.6	1	V
<b>DYNAMIC</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5, I <sub>D</sub> =6.5A		10		nC
Q <sub>gs</sub>	Gate-Source Charge			0.9		
Q <sub>gd</sub>	Gate-Drain Charge			3		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz		378		pF
C <sub>oss</sub>	Output Capacitance			73		
C <sub>rss</sub>	Reverse Transfer Capacitance			21		
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =10V, R <sub>L</sub> = 1.5Ω V <sub>GS</sub> =5V, R <sub>GEN</sub> =3Ω		250		ns
t <sub>r</sub>	Turn-On Rise Time			420		
t <sub>d(off)</sub>	Turn-Off Delay Time			3950		
t <sub>f</sub>	Turn-Off Fall Time			3700		

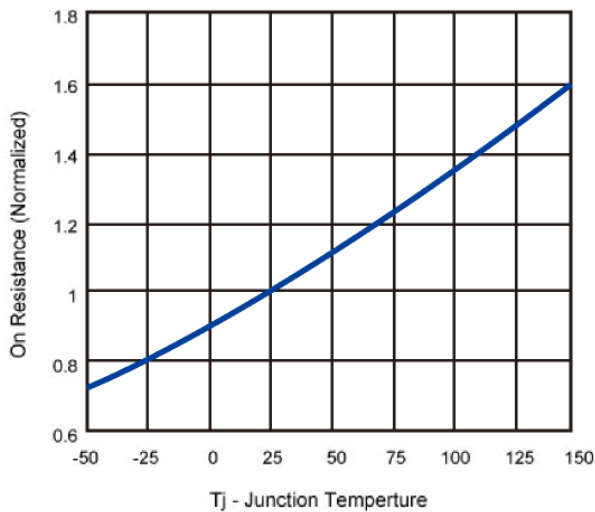
Notes: a. Pulse test; pulse width ≤ 300us, duty cycle ≤ 2%

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

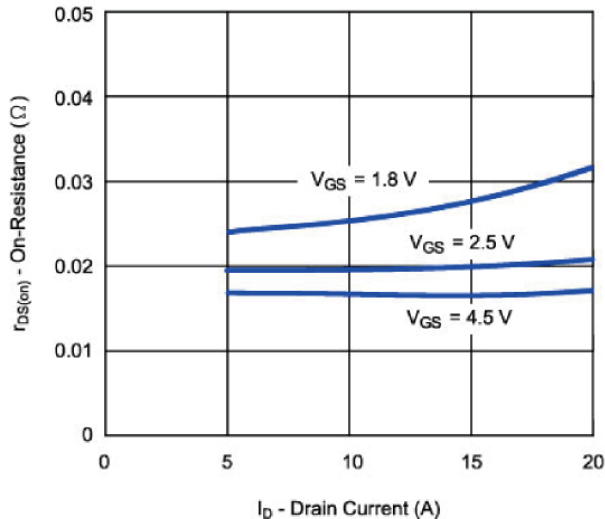
**N-Channel 20V (D-S) MOSFET , ESD Protection**

**Typical Characteristics (T<sub>J</sub> =25°C Noted)**

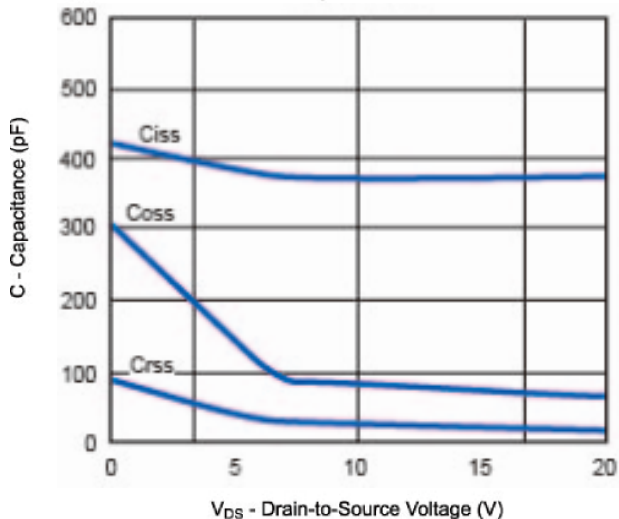
**On Resistance vs. Junction Temperature**



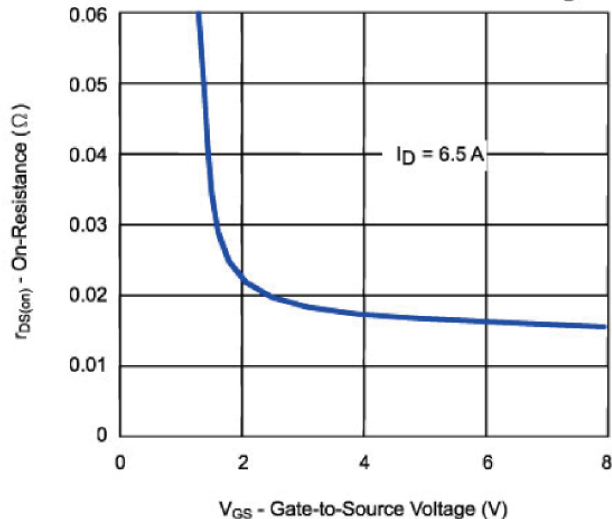
**On-Resistance vs. Drain Current**



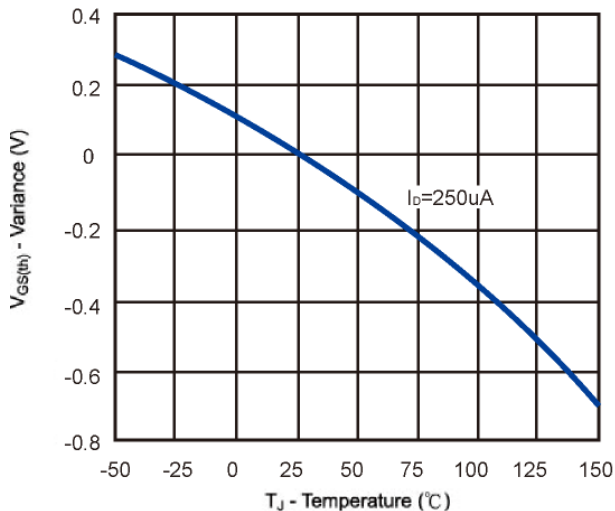
**Capacitance**



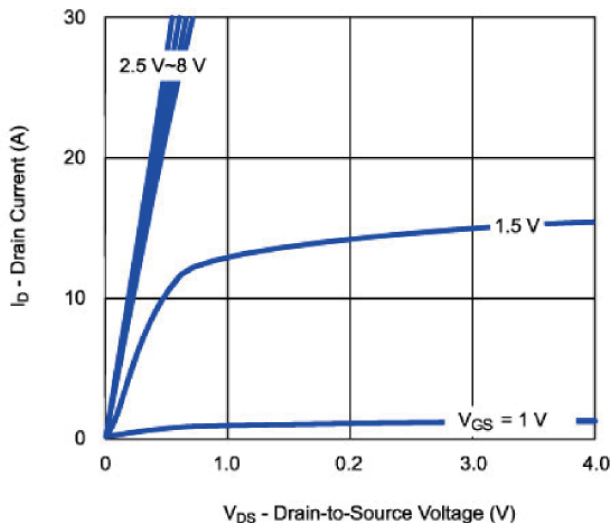
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**

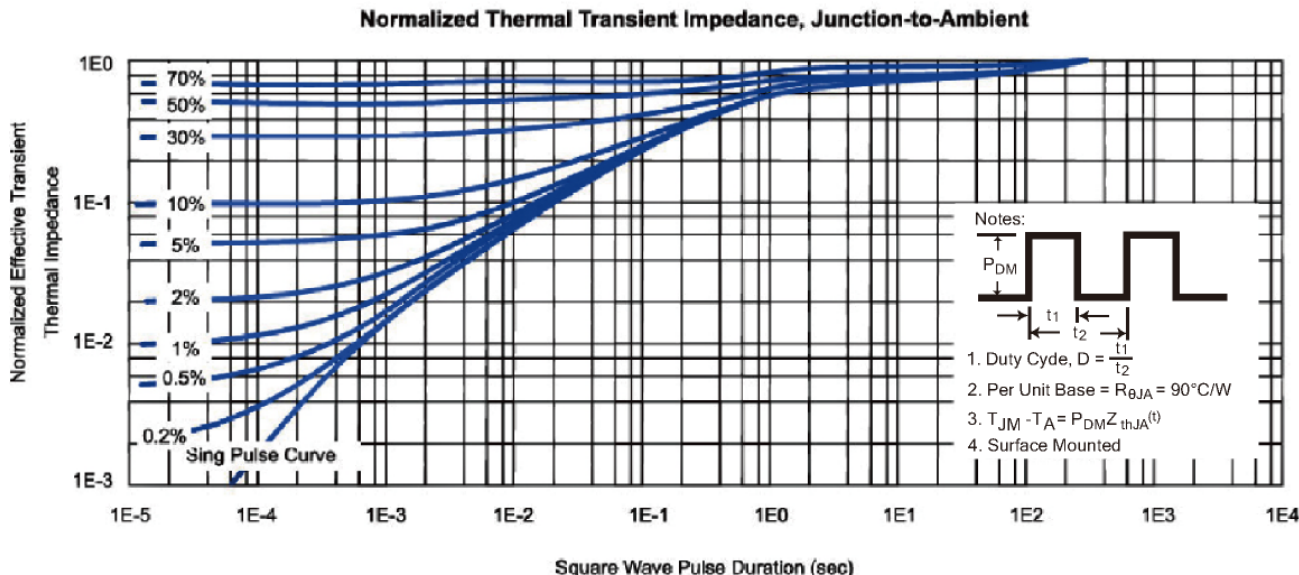
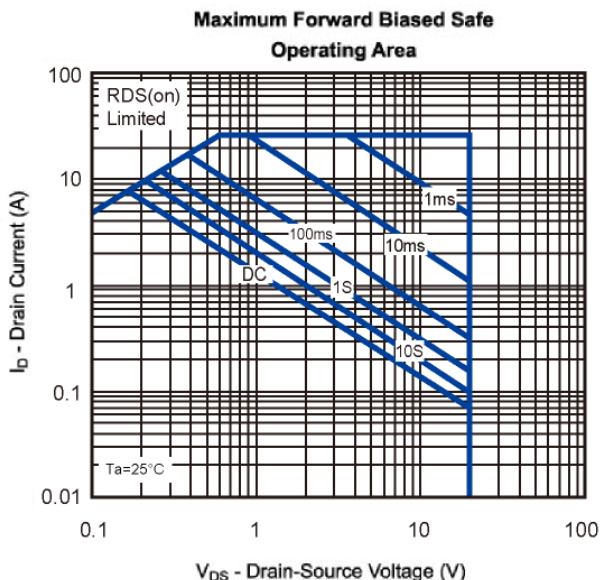
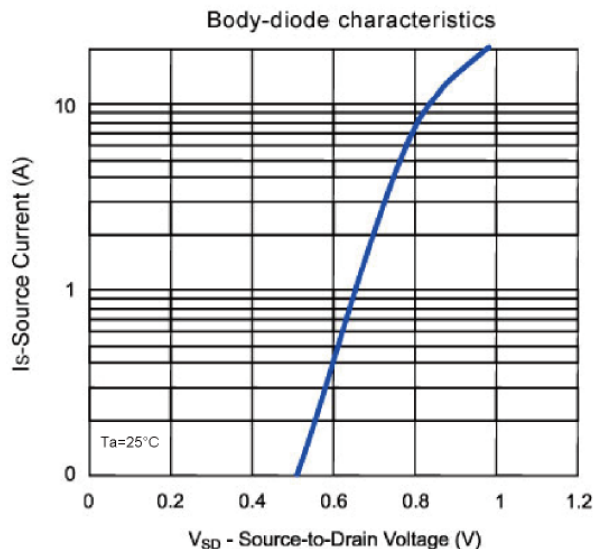
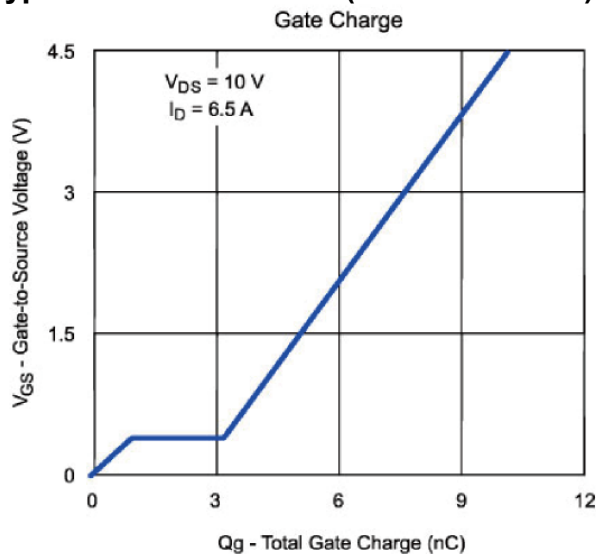


**On-Region Characteristics**

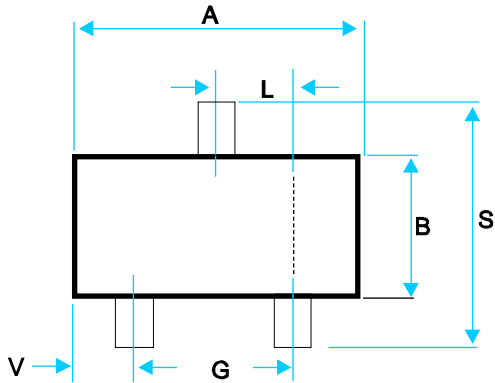


**N-Channel 20V (D-S) MOSFET , ESD Protection**

**Typical Characteristics (T<sub>J</sub> =25°C Noted)**



**SOT-23 Package Outline**



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	2.800	3.00
B	1.200	1.70
C	0.900	1.30
D	0.350	0.50
G	1.780	2.04
H	0.010	0.15
J	0.085	0.20
K	0.300	0.65
L	0.890	1.02
S	2.100	3.00
V	0.450	0.60

