

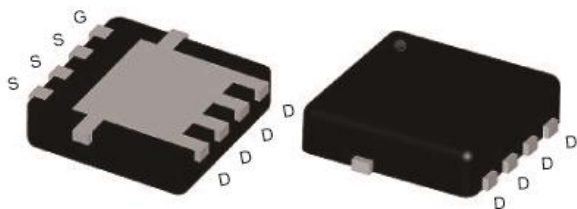
N-Channel 30V (D-S) MOSFET

GENERAL DESCRIPTION

The ME7232S-G is the N-Channel logic enhancement mode power field effect transistors, 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, notebook computer power management and other battery powered circuits, and lower power loss that are needed in a very small outline surface mount package.

PIN CONFIGURATION

DFN(S) 3X3 View



Ordering Information: ME7232S (Pb free)

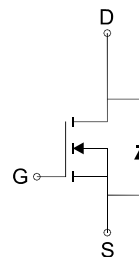
ME7232S-G (Green product-Halogen free)

FEATURES

- $R_{DS(ON)} \leq 5 \text{ m}\Omega @ V_{GS}=10\text{V}$
- $R_{DS(ON)} \leq 7 \text{ m}\Omega @ V_{GS}=4.5\text{V}$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

APPLICATIONS

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



N-Channel MOSFET

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

Parameter		Symbol	Maximum Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current*	$T_A=25^\circ\text{C}$	I_D	21.7	A
	$T_A=70^\circ\text{C}$		17.4	
	$T_C=25^\circ\text{C}$		68.6	
	$T_C=70^\circ\text{C}$		55	
Pulsed Drain Current		I_{DM}	206	A
Maximum Power Dissipation*	$T_A=25^\circ\text{C}$	P_D	3.79	W
	$T_A=25^\circ\text{C}$		2.42	
	$T_C=25^\circ\text{C}$		37.8	
	$T_C=25^\circ\text{C}$		24.2	
Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Junction-to-Ambient Thermal Resistance*		$R_{\theta JA}$	33	$^\circ\text{C/W}$
Thermal Resistance-Junction to Case*		$R_{\theta JC}$	3.3	$^\circ\text{C/W}$

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

*Chip silicon limitation current is 100A

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N-Channel 30V (D-S) MOSFET
Electrical Characteristics ($T_J = 25^\circ\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu A$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\ \mu A$	1		2	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
$R_{DS(on)}$	Drain-Source On-State Resistance ^a	$V_{GS}=10V, I_D=8A$		3.9	5	m Ω
		$V_{GS}=4.5V, I_D=5A$		5.2	7	
V_{SD}	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$			1	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=6.5A$		33.2		nC
Q_{gs}	Gate-Source Charge			7.4		
Q_{gd}	Gate-Drain Charge			7.1		
C_{iss}	Input capacitance	$V_{DS}=15V, V_{GS}=0V, f=1.0MHz$		1527		pF
C_{oss}	Output Capacitance			187		
C_{rss}	Reverse Transfer Capacitance			151		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, R_L=2.3\ \Omega$ $R_{GEN}=3.3\ \Omega, V_{GS}=10V$		16.8		ns
t_r	Turn-On Rise Time			50.8		
$t_{d(off)}$	Turn-Off Delay Time			41.8		
t_f	Turn-Off Fall Time			15.7		
Single pulse Avalanche Energy						
Single pulse Avalanche Energy $L=0.1mH$		I_{AS}		29		A
Single pulse Avalanche Energy $L=0.1mH$		E_{AS}		42		mJ

 Notes: a. Pulse test; pulse width $\leq 300\ \mu s$, duty cycle $\leq 2\%$

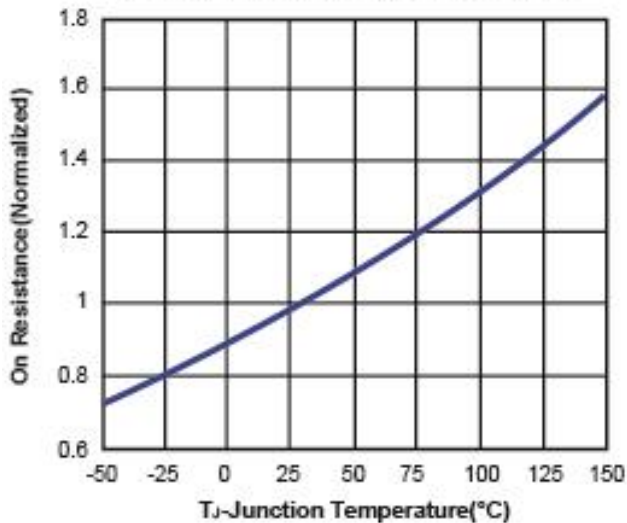
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.



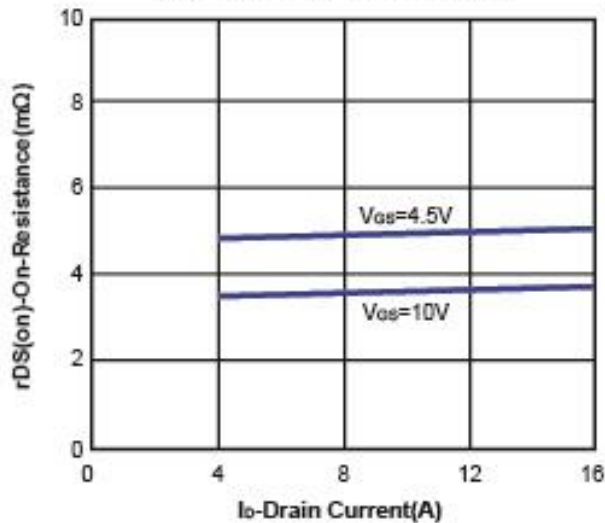
N-Channel 30V (D-S) MOSFET

Typical Characteristics (T_J =25°C Noted)

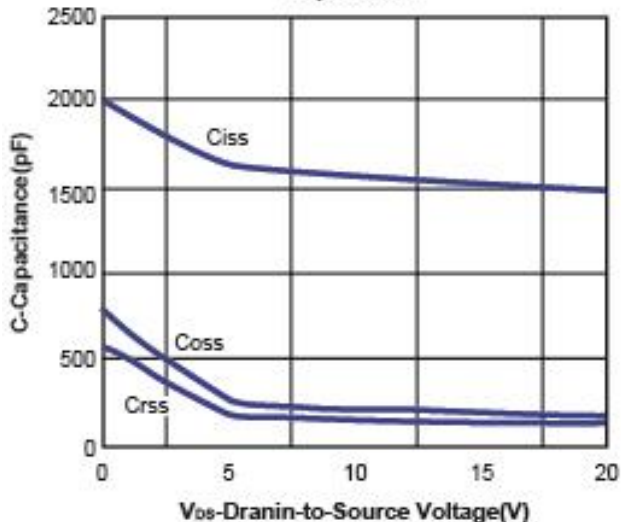
On Resistance vs. Junction Temperature



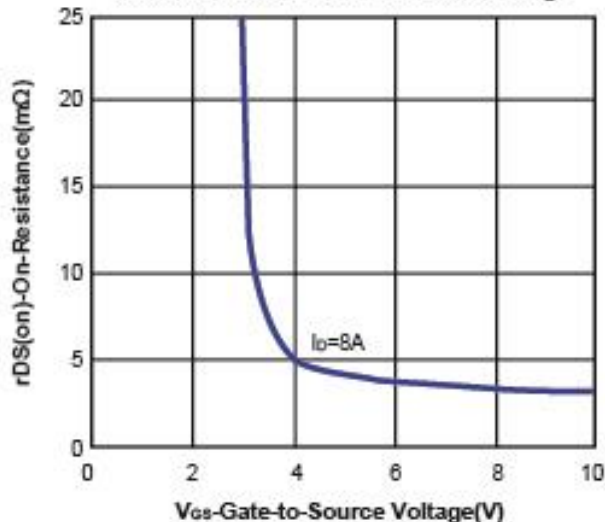
On Resistance vs. Drain Current



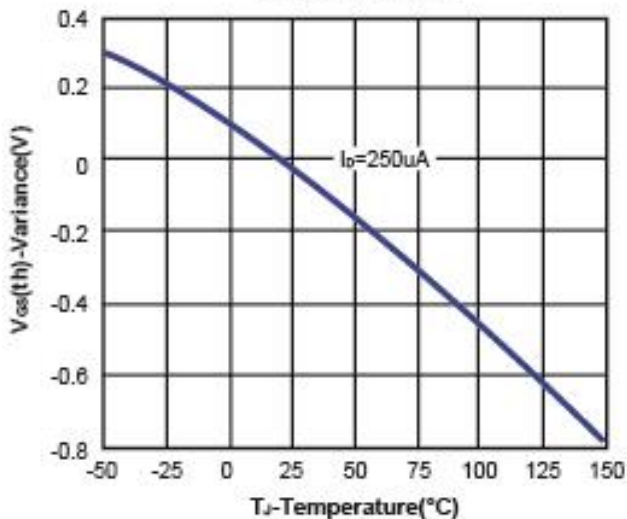
Capacitance



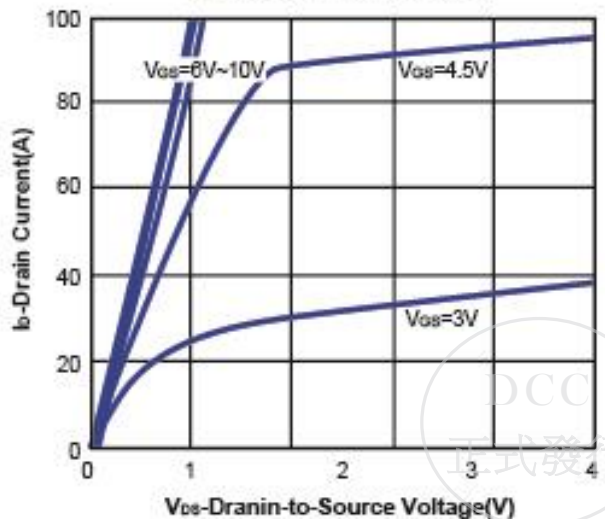
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



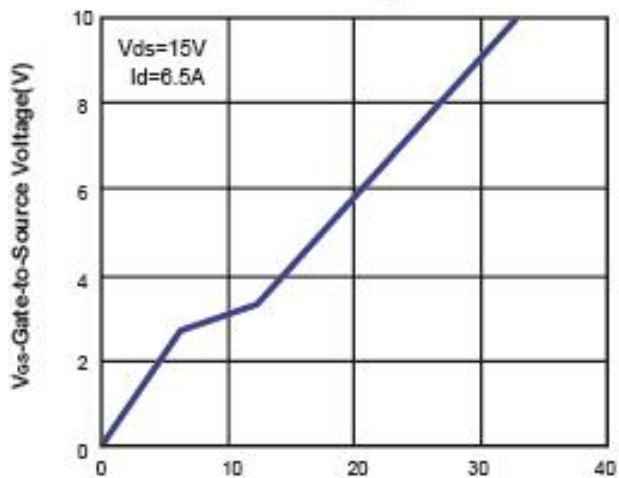
On-Region Characteristics



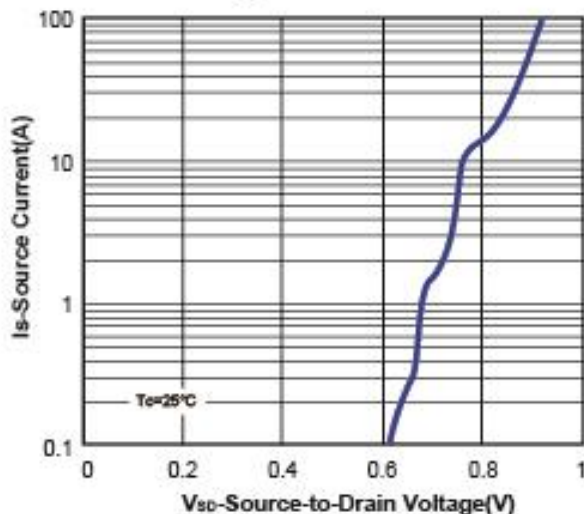
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Typical Characteristics (T_J = 25°C Noted)

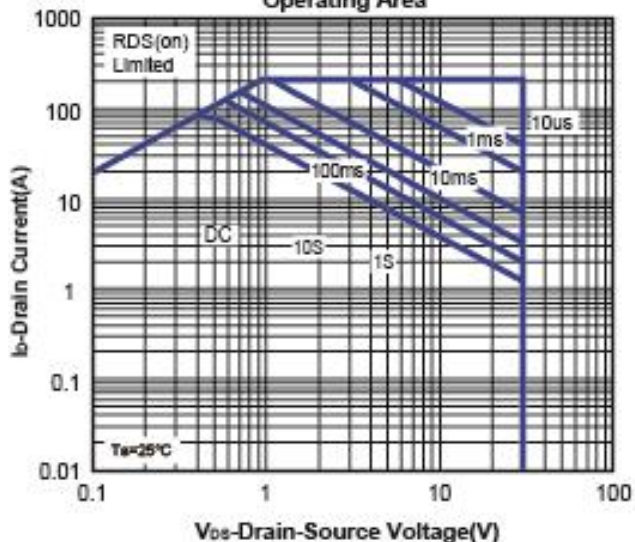
Gate Charge



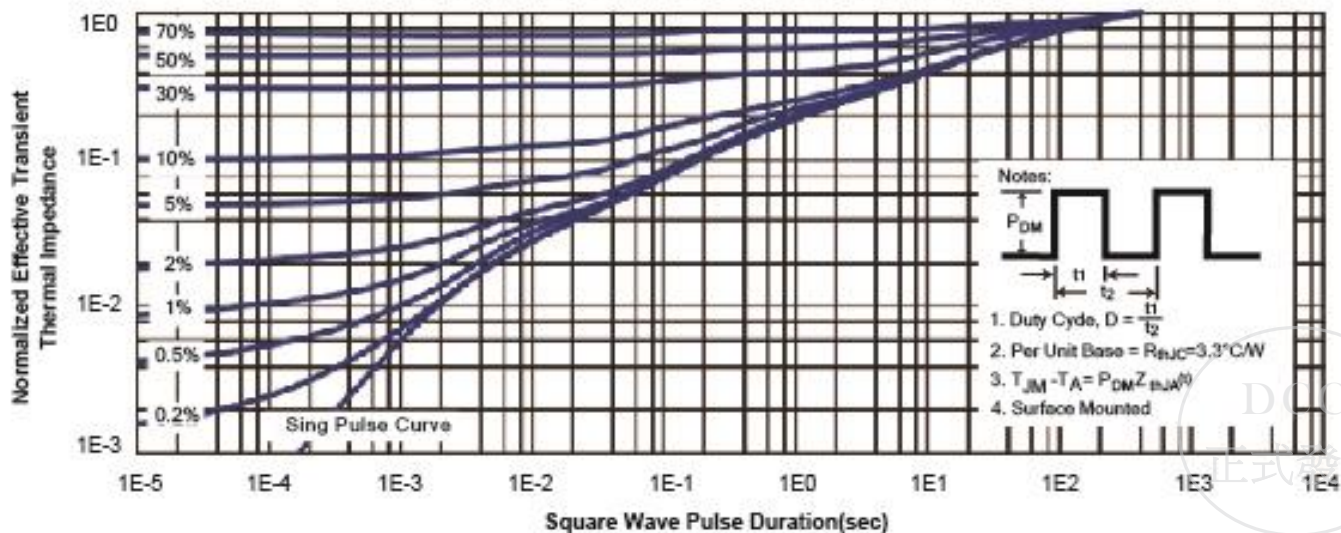
Body-diode characteristics



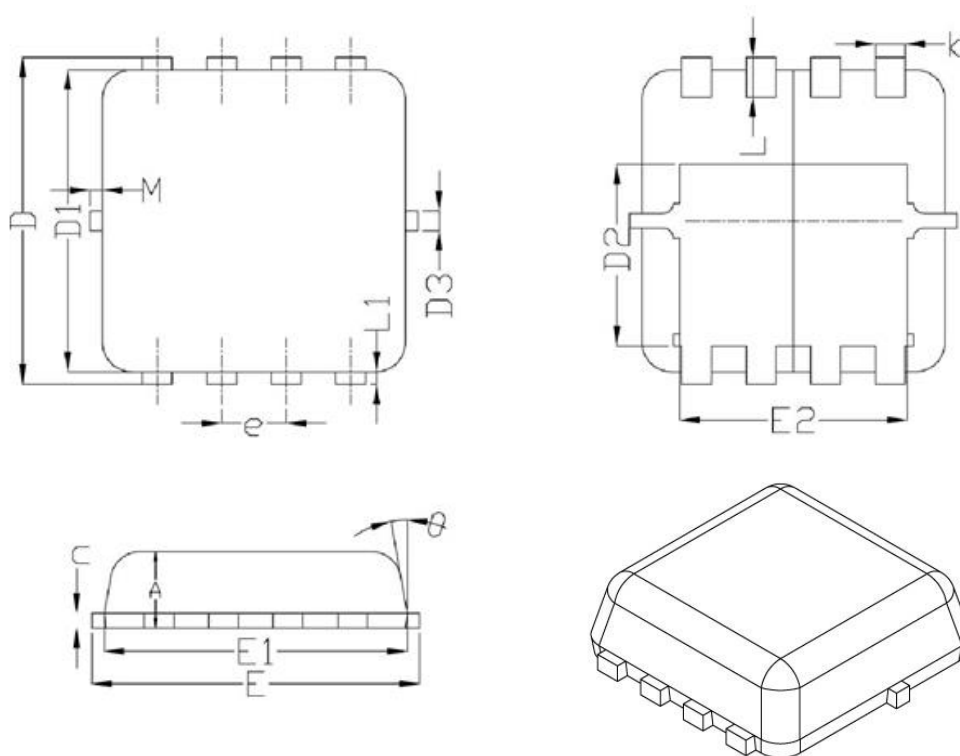
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



DFN(S)3X3 Package Outline



SYMBOL	DIMENSIONAL REQMTS	
	MIN	MAX
A	0.70	0.90
b	0.20	0.40
c	0.08	0.25
D	2.70	3.45
D1	2.20	3.20
D2	1.54	1.98
D3	0.10	0.30
E	3.15	3.45
E1	2.80	3.30
E2	2.25	2.65
e	0.65BSC	
H	0.28	0.68
L	0.30	0.50
L1	0.06	0.20
Θ	---	12°
M	*	0.15
* Not specified		

