

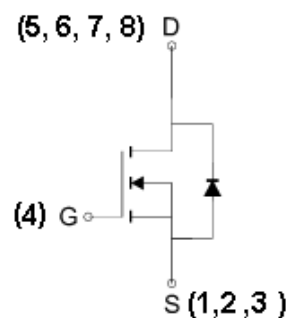
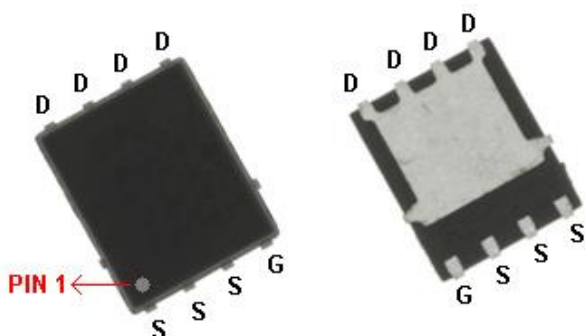
**N-Channel 30V(D-S) Enhancement MOSFET**

**GENERAL DESCRIPTION**

The ME7170-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 notebook computer power management and other battery powered circuits where Low-side switching , and low in-line power loss are needed in a very small outline surface mount package.

**PIN CONFIGURATION**

PowerDFN 5x6



N-Channel MOSFET

**FEATURES**

- $R_{DS(ON)} \leq 2.6m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} \leq 3.9m\Omega @ V_{GS}=4.5V$
- 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
- NB/MB Vcore Low side switching
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch

Ordering Information: ME7170-G (Green product-Halogen free)

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

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current*	I <sub>D</sub>	T <sub>A</sub> =25°C	110
		T <sub>A</sub> =70°C	90
Pulsed Drain Current	I <sub>DM</sub>	450	A
Maximum Power Dissipation*	P <sub>D</sub>	T <sub>A</sub> =25°C	56
		T <sub>A</sub> =70°C	36
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C
Thermal Resistance-Junction to Case*	R <sub>θJC</sub>	2.2	°C/W

\*The device mounted on 1in<sup>2</sup> FR4 board with 2 oz copper



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

Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC</b>						
$V_{(BR)DSS}$	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		2.2	V
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
$R_{DS(ON)}$	Drain-Source On-State Resistance <sup>a</sup>	$V_{GS}=10V, I_D=25A$		2.4	2.6	m $\Omega$
		$V_{GS}=4.5V, I_D=19A$		3.3	3.9	
$V_{SD}$	Diode Forward Voltage	$I_S=25A, V_{GS}=0V$		0.8	1.2	V
<b>DYNAMIC</b>						
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V, I_D=20A$		86		nC
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V, I_D=20A$		39		nC
$Q_{gs}$	Gate-Source Charge			19		
$Q_{gd}$	Gate-Drain Charge			12		
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, F=1MHz$		5406		pF
$C_{oss}$	Output Capacitance			487		
$C_{rss}$	Reverse Transfer Capacitance			418		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, R_L=15\Omega$ $V_{GS}=10V, R_G=6\Omega$ $I_D=1A$		27		ns
$t_r$	Turn-On Rise Time			51		
$t_{d(off)}$	Turn-Off Delay Time			152		
$t_f$	Turn-Off Fall Time			54		

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

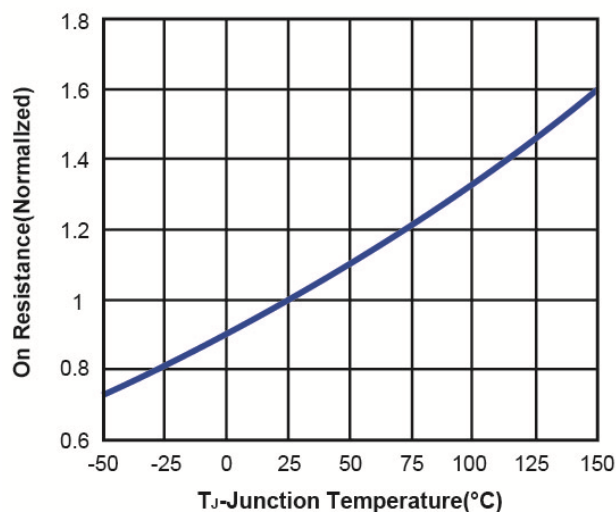
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.



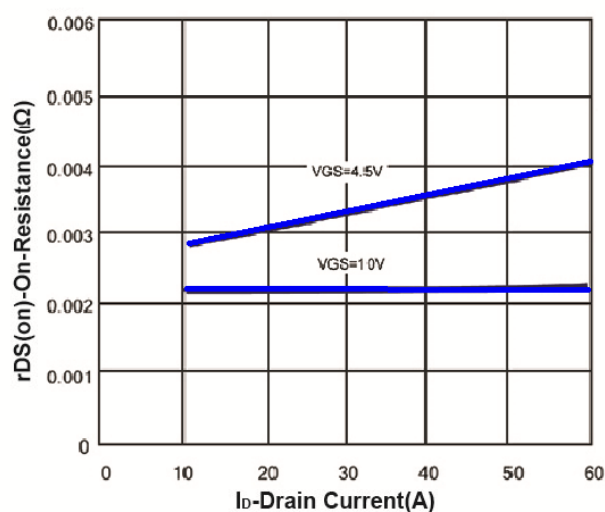
**N-Channel 30V(D-S) Enhancement MOSFET**

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

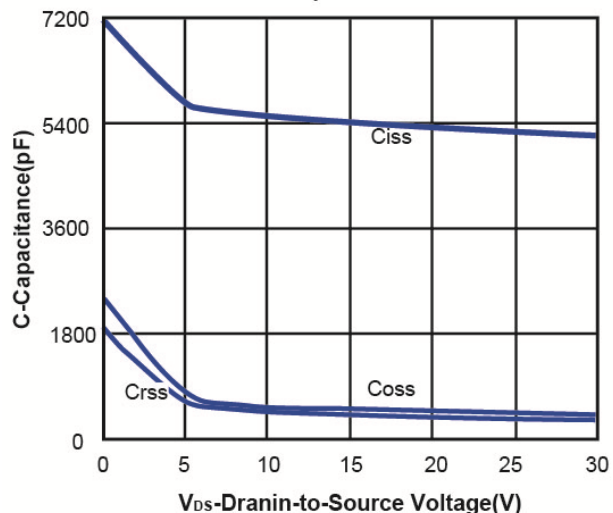
On Resistance vs. Junction Temperature



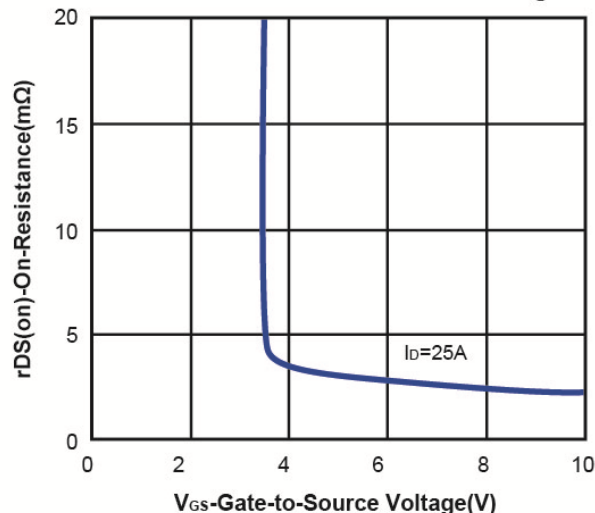
On Resistance vs. Drain Current



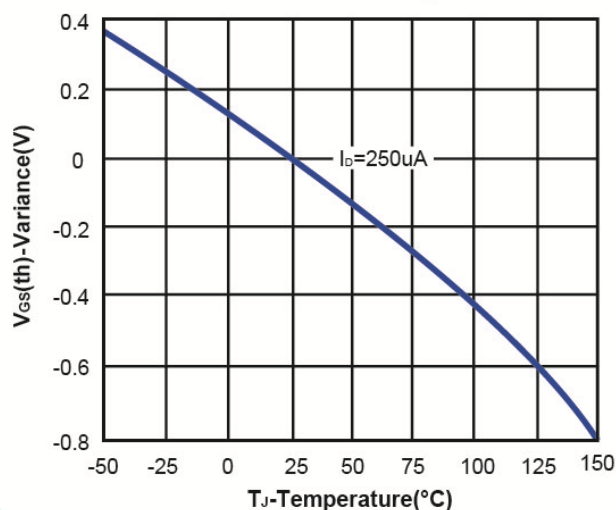
Capacitance



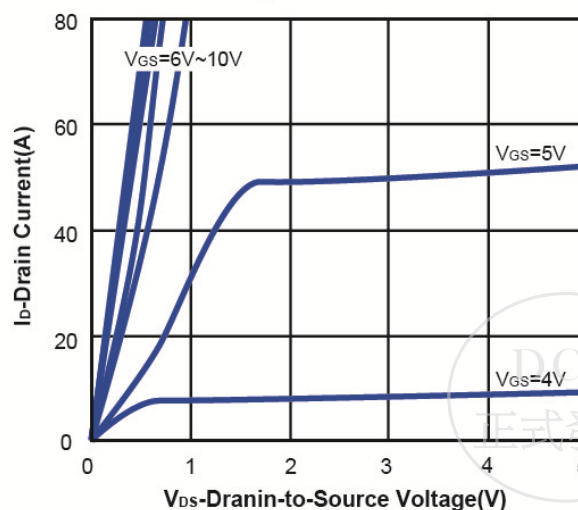
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage



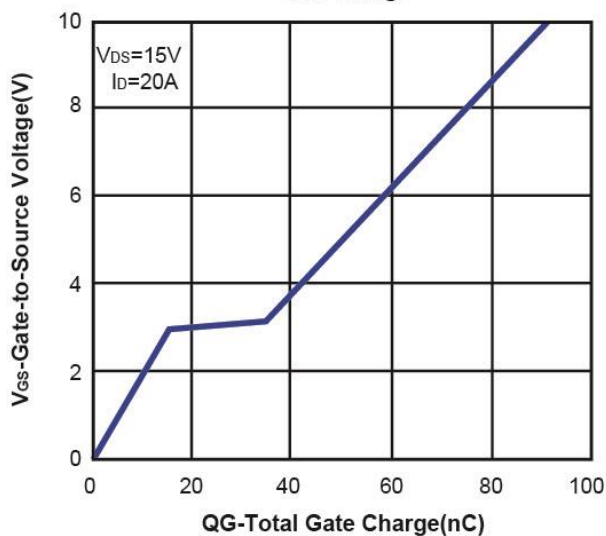
On-Region Characteristics



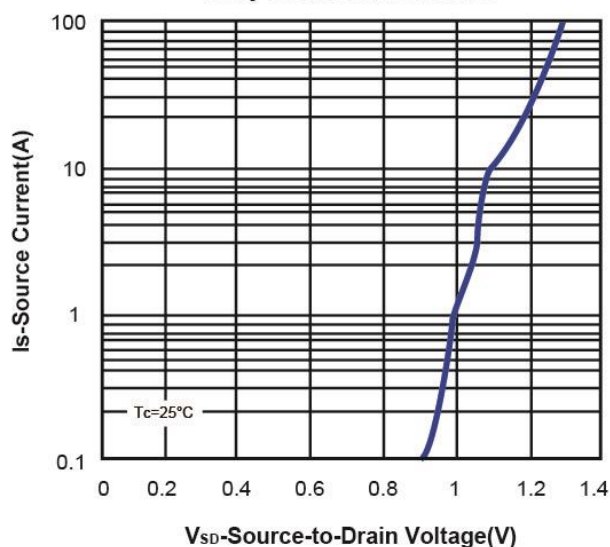
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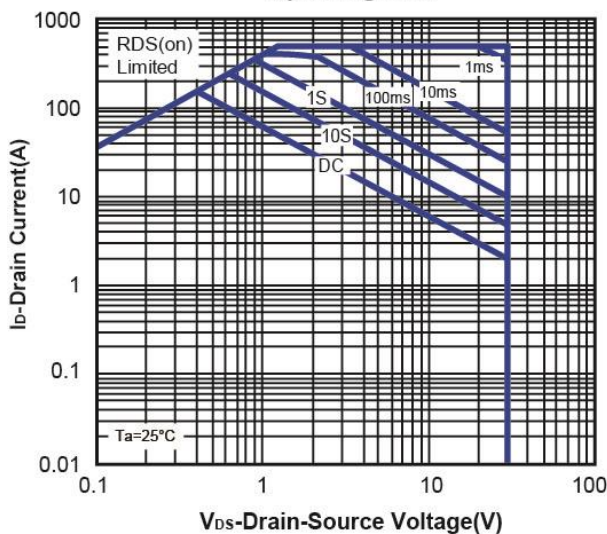
Gate Charge



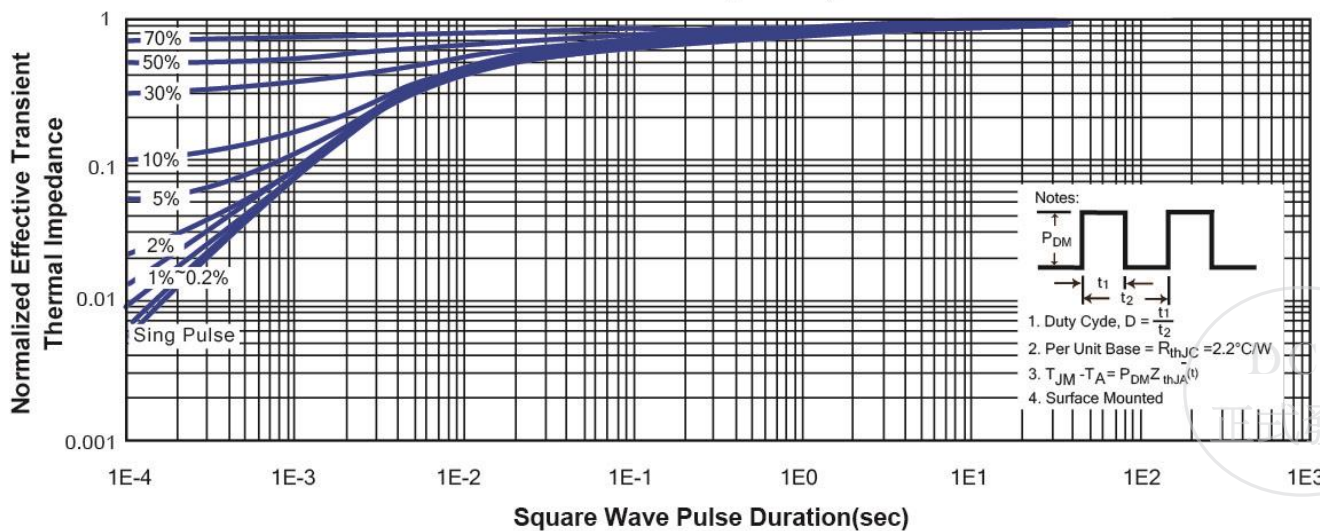
Body-diode characteristics



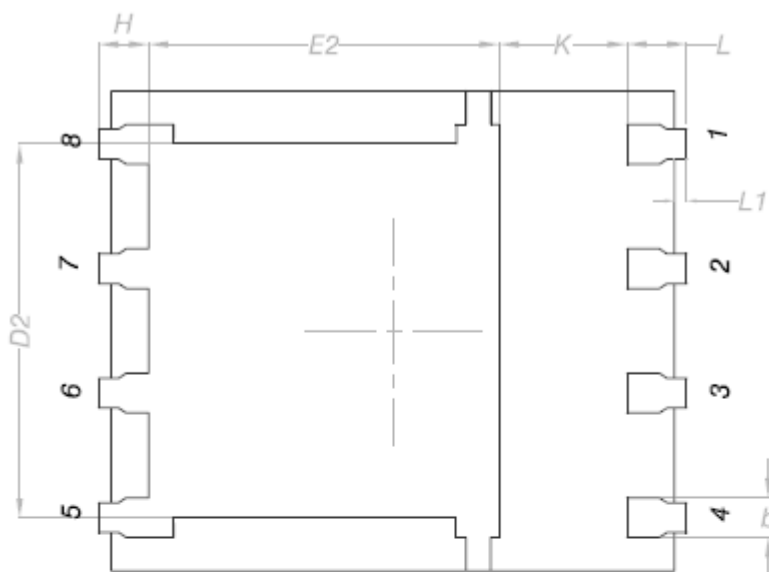
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



**PowerDFN 5x6 Package Outline**



BACKSIDE VIEW

DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
$\alpha$	0°	-	12°

