N-Channel Logic Level Enhancement Mode Power MOSFET

MTB03N03H8

BV_{DSS}	30V
I_D	75A
$R_{DSON(max)}$	3mΩ

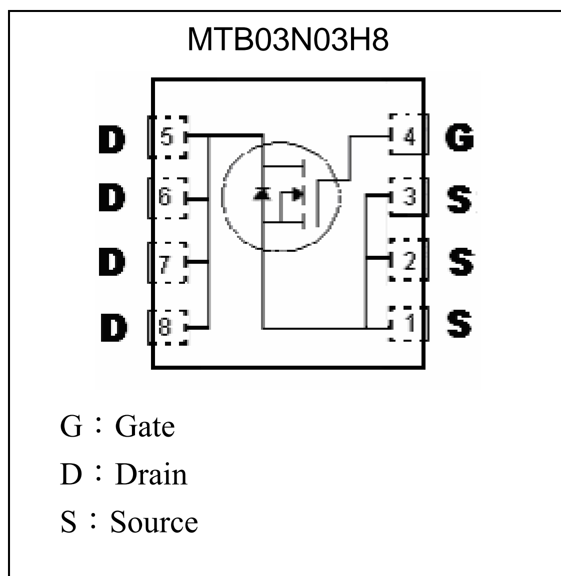
Description

The MTB03N03H8 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness.

Features

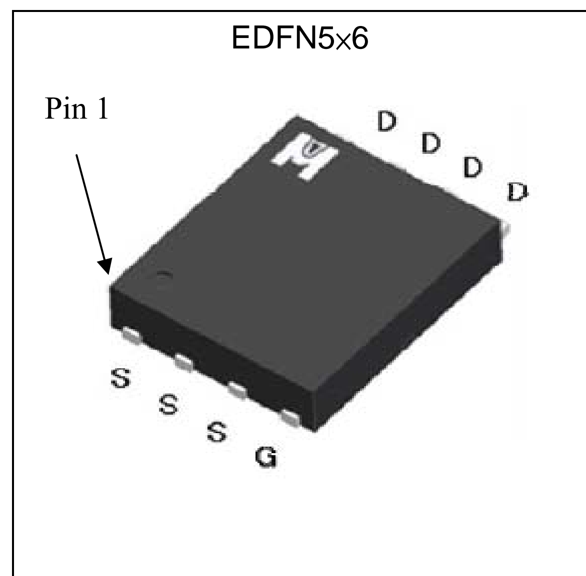
- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Dynamic dv/dt rating
- Repetitive Avalanche Rated
- Pb-free lead plating and Halogen-free package

Symbol



G : Gate
D : Drain
S : Source

Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current @ T_C=25°C		I_D	75	A
Continuous Drain Current @ T_C=100°C			45	
Pulsed Drain Current		I_{DM}	160 *1	
Avalanche Current		I_{AS}	53	
Avalanche Energy @ L=0.1mH, I_D=53A, R_G=25Ω		E_{AS}	140	mJ
Repetitive Avalanche Energy @ L=0.05mH		E_{AR}	40 *2	
Total Power Dissipation	T_C=25℃	P_D	60	W
	T_C=100℃		32	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+175	°C

100% UIS testing in condition of V_D=15V, L=0.1mH, V_G=10V, I_L=40A, Rated V_{DS}=30V N-CH

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	2.5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	50 *3	°C/W

Note : 1. Pulse width limited by maximum junction temperature
2. Duty cycle≤1%
3. Surface mounted on 1 in² copper pad of FR-4 board, 125°C/W when mounted on minimum copper pad

Characteristics (T_C=25°C, unless otherwise specified)

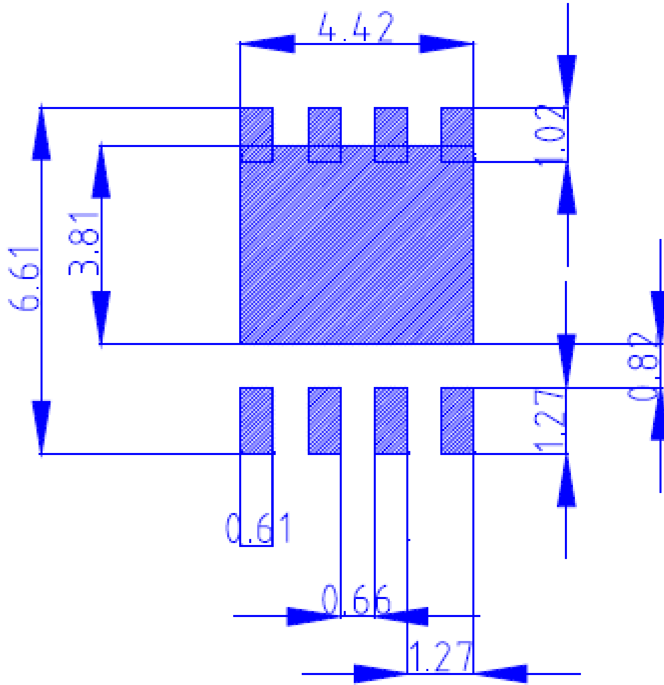
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
$V_{GS(th)}$	1.0	1.5	3.0	V	V_{DS} = V_{GS}, I_D=250μA
G_{FS} *1	-	25	-	S	V_{DS} =5V, I_D=24A
I_{GSS}	-	-	±100	nA	V_{GS}=±20
I_{DSS}	-	-	1	μA	V_{DS} =24V, V_{GS} =0
	-	-	25		V_{DS} =20V, V_{GS} =0, Tj=125°C
$I_{D(ON)}$ *1	75	-	-	A	V_{DS} =10V, V_{GS} =10V
$R_{DS(ON)}$ *1	-	2.6	3	mΩ	V_{GS} =10V, I_D=30A
	-	4	5	mΩ	V_{GS} =4.5V, I_D=24A
Dynamic					
Ciss	-	3850	-	pF	V_{GS}=0V, V_{DS}=15V, f=1MHz
Coss	-	635	-		
Crss	-	522	-		

Characteristics (T_C=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Qg (V_{GS}=10V) *1, 2	-	48	-	nC	V_{DS}=15V, V_{GS}=10V, I_D=30A
Qg (V_{GS}=4.5V) *1, 2	-	27	-		
Qgs *1, 2	-	6	-		
Qgd *1, 2	-	16	-		
$t_{d(ON)}$ *1, 2	-	20	-	ns	V_{DS}=15V, I_D=24A, V_{GS}=10V, R_{GS}=2.7Ω
tr *1, 2	-	15	-		
$t_{d(OFF)}$ *1, 2	-	65	-		
t_f *1, 2	-	10	-		
Rg	-	1.2	-	Ω	V_{GS}=15mV, V_{DS}=0V, f=1MHz
Source-Drain Diode					
I_S *1	-	-	75	A	
I_{SM} *3	-	-	150		
V_{SD} *1	-	-	1.3	V	I_F=I_S, V_{GS}=0V
trr	-	32	-	ns	I_F=I_S, dI_F/dt=100A/μs
Qrr	-	12	-	nC	

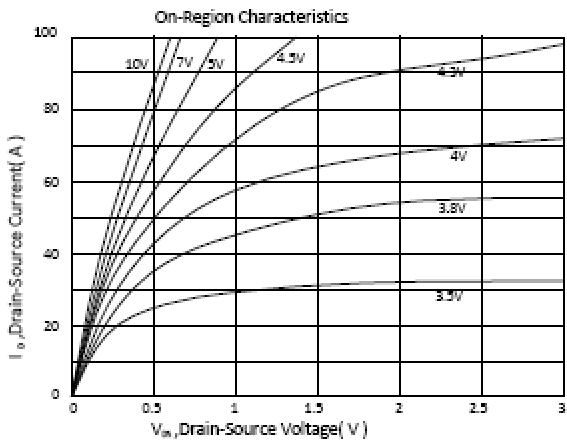
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

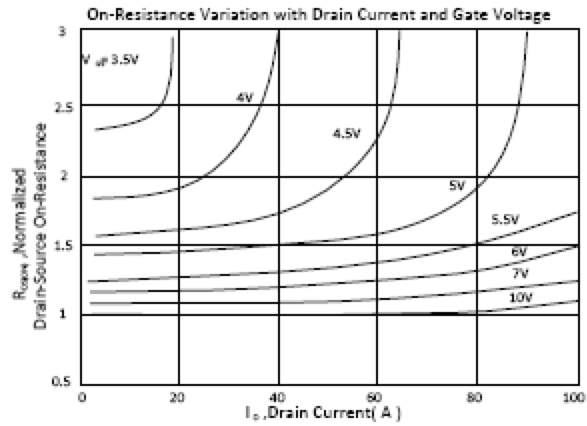
Recommended Soldering Footprint

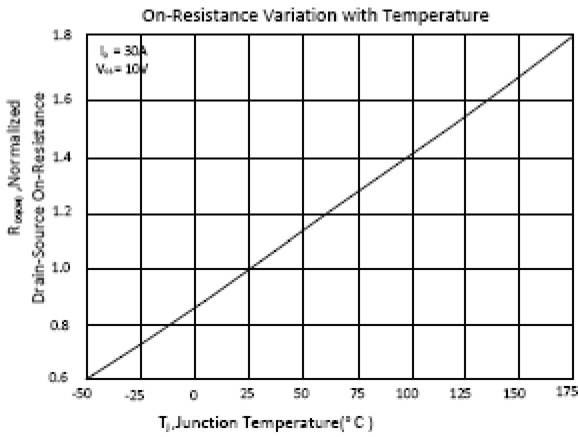


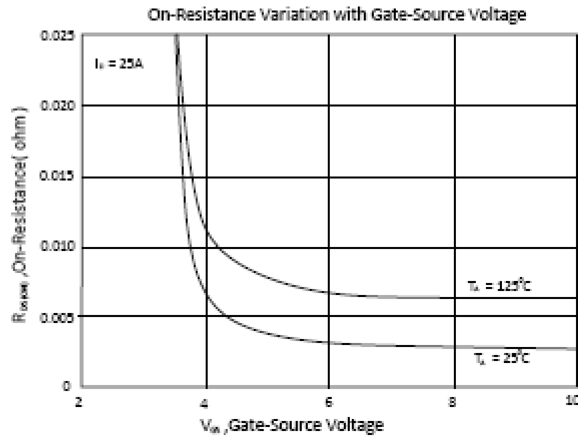
unit : mm

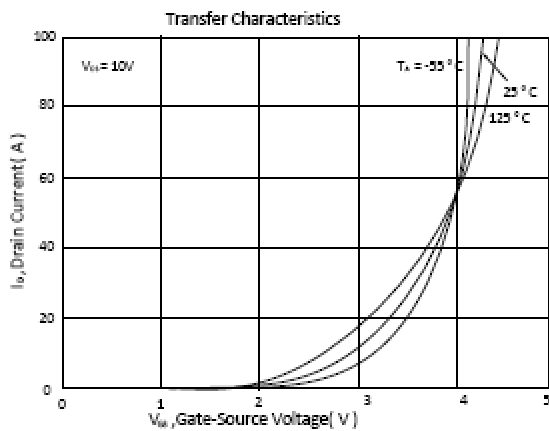
Typical Characteristics

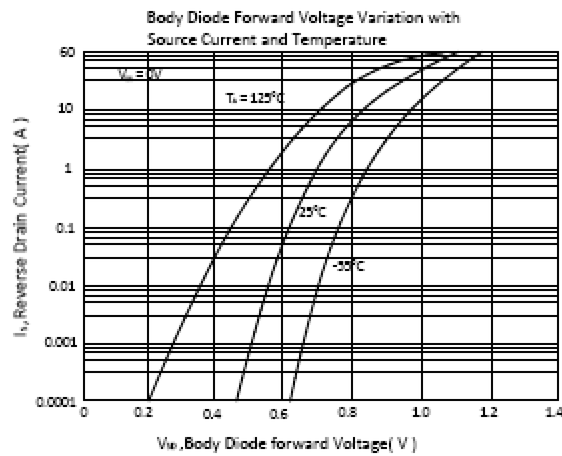




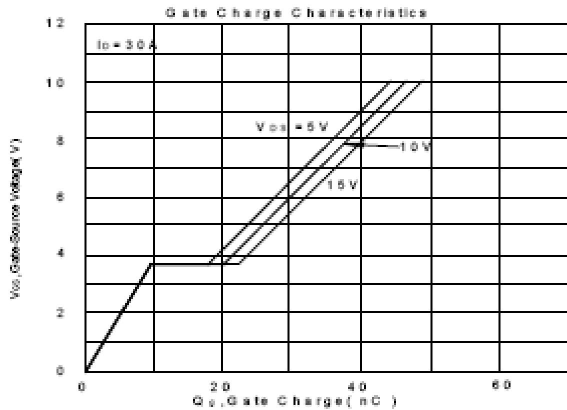


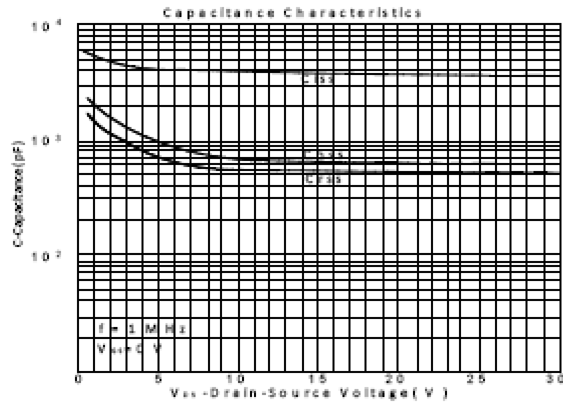


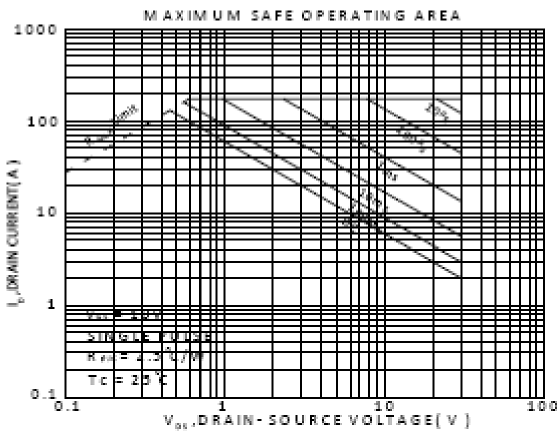


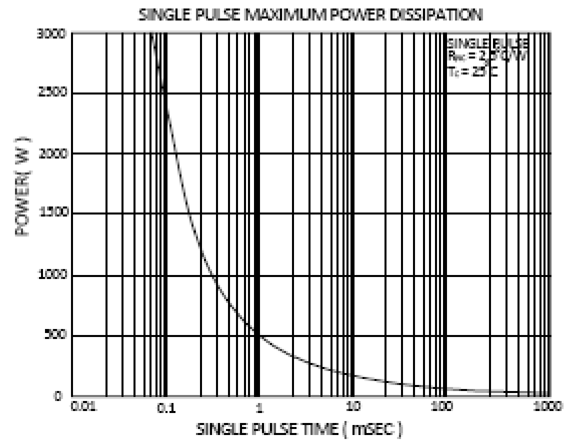


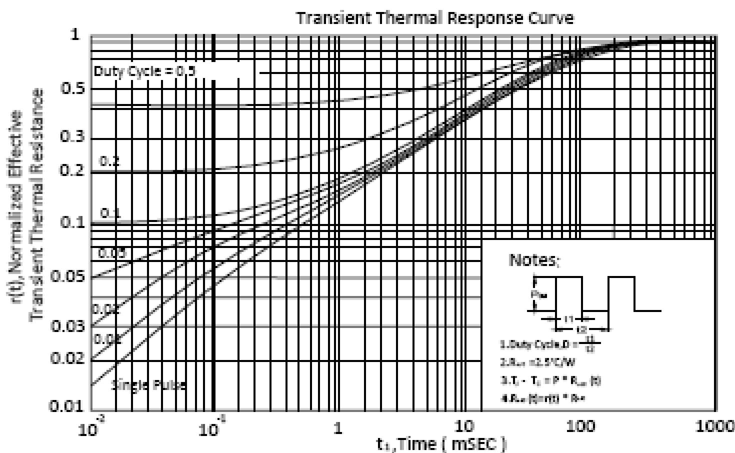
Typical Characteristics(Cont.)



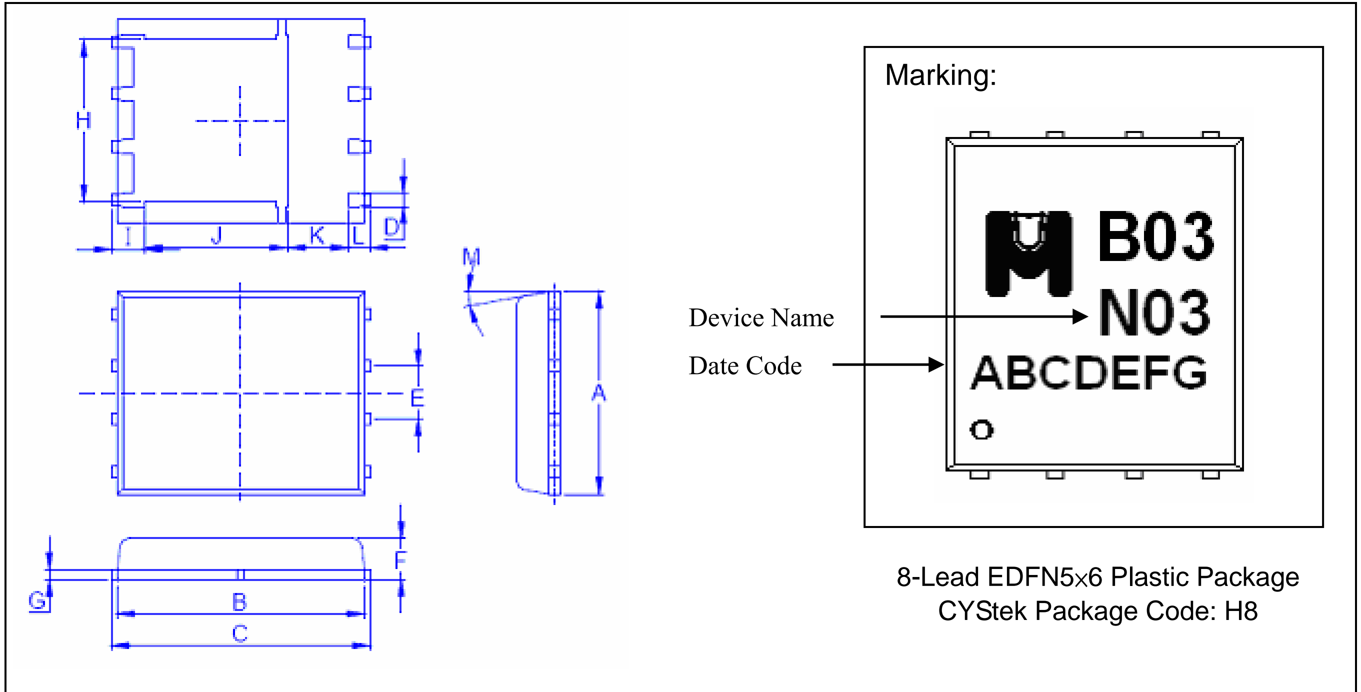








EDFN5×6 Dimension



8-Lead EDFN5×6 Plastic Package
CYStek Package Code: H8

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1890	0.2087	4.80	5.30	I	0.0161	0.0307	0.41	0.78
B	0.2165	0.2283	5.50	5.80	J	0.1331	0.1543	3.38	3.92
C	0.2323	0.2402	5.90	6.10	K	0.0370	-	0.94	-
D	0.0118	0.0201	0.30	0.51	L	0.0177	0.0280	0.45	0.71
E	0.0500*		1.27*		M	0°	12°	0°	12°
F	0.0335	0.0472	0.85	1.20					
G	0.0059	0.0118	0.15	0.30					
H	0.1445	0.1787	3.67	4.54					

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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