

N-Channel Enhancement Mode Power MOSFET

MTN1308E3

BV_{DSS}	75V
$R_{DS(on)}$	13 m Ω
I_D	80A

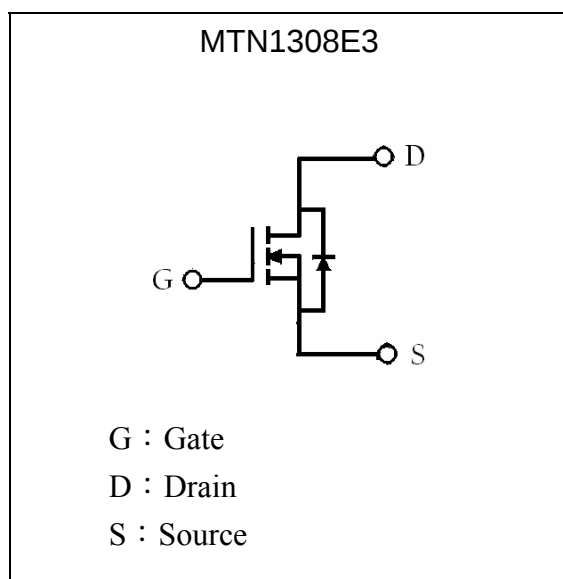
Description

The MTN1308E3 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. The TO-220 package is universally preferred for all commercial-industrial applications

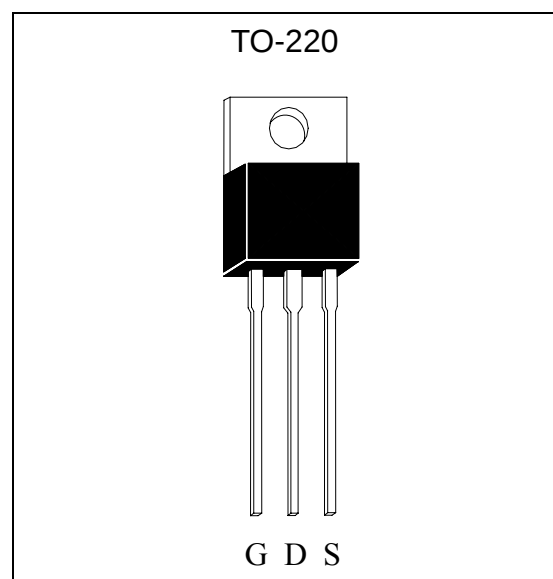
Features

- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

Symbol



Outline



**Absolute Maximum Ratings** ($T_c=25^{\circ}\text{C}$)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	75	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	80	A
Continuous Drain Current @ $T_c=100^{\circ}\text{C}$	I_D	55	A
Pulsed Drain Current @ $V_{GS}=10\text{V}$ (Note 1)	I_{DM}	200	A
Avalanche Current	I_{AS}	40	A
Single Pulse Avalanche Energy @ $L=0.5\text{mH}$, $I_D=40\text{A}$, $R_G=25\Omega$	E_{AS}	400	mJ
Repetitive Avalanche Energy @ $L=0.1\text{mH}$ (Note 2)	E_{AR}	80	
Maximum Temperature for Soldering @ Lead at 0.063 in(1.6mm) from case for 10 seconds	T_L	300	$^{\circ}\text{C}$
Maximum Temperature for Soldering @ Package Body for 10 seconds	T_{PKG}	260	$^{\circ}\text{C}$
Total Power Dissipation ($T_c=25^{\circ}\text{C}$) Linear Derating Factor	P_d	230	W
		1.87	W/ $^{\circ}\text{C}$
Operating Junction and Storage Temperature	T_j, T_{stg}	-55~+175	$^{\circ}\text{C}$

Note : *1. Pulse width limited by maximum junction temperature.

*2. Duty $\leq 1\%$ **Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	0.65	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	62.5	$^{\circ}\text{C/W}$

**Characteristics (Tc=25°C, unless otherwise specified)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	75	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	1.5	2.5	4.0	V	V _{DS} = V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±30
I _{DSS}	-	-	1	μA	V _{DS} =60V, V _{GS} =0
I _{DSS}	-	-	25	μA	V _{DS} =50V, V _{GS} =0, T _j =125°C
I _{DON}	80	-	-	A	V _{DS} =10V, V _{GS} =10V (Note 1)
R _{DS(ON)}	-	10.5	13	mΩ	V _{GS} =10V, I _D =30A (Note 1)
G _{FS}	-	38	-	S	V _{DS} =5V, I _D =30A (Note 1)
Dynamic					
Q _g	-	42	-	nC	V _{DS} =80V, I _D =30A, V _{GS} =10V (Note 1 & 2)
Q _{gs}	-	19	-		
Q _{gd}	-	17	-		
t _{d(ON)}	-	25	-	ns	V _{DS} =50V, I _D =1A, V _{GS} =10V, R _{GS} =6Ω (Note 1 & 2)
t _r	-	200	-		
t _{d(OFF)}	-	100	-		
t _f	-	120	-		
C _{iss}	-	10587	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	340	-		
C _{rss}	-	242	-		
R _g	-	2	-	Ω	V _{GS} =15mV, V _{DS} =0V, f=1MHz
Source-Drain Diode					
I _S	-	-	80	A	(Note 3)
I _{SM}	-	-	200		
V _{SD}	-	-	1.3	V	I _S =80A, V _{GS} =0V (Note 1)
t _{rr}	-	120	-	ns	V _{GS} =0, I _F =25A, dI _F /dt=100A/μs
Q _{rr}	-	380	-	nC	

Note : 1. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

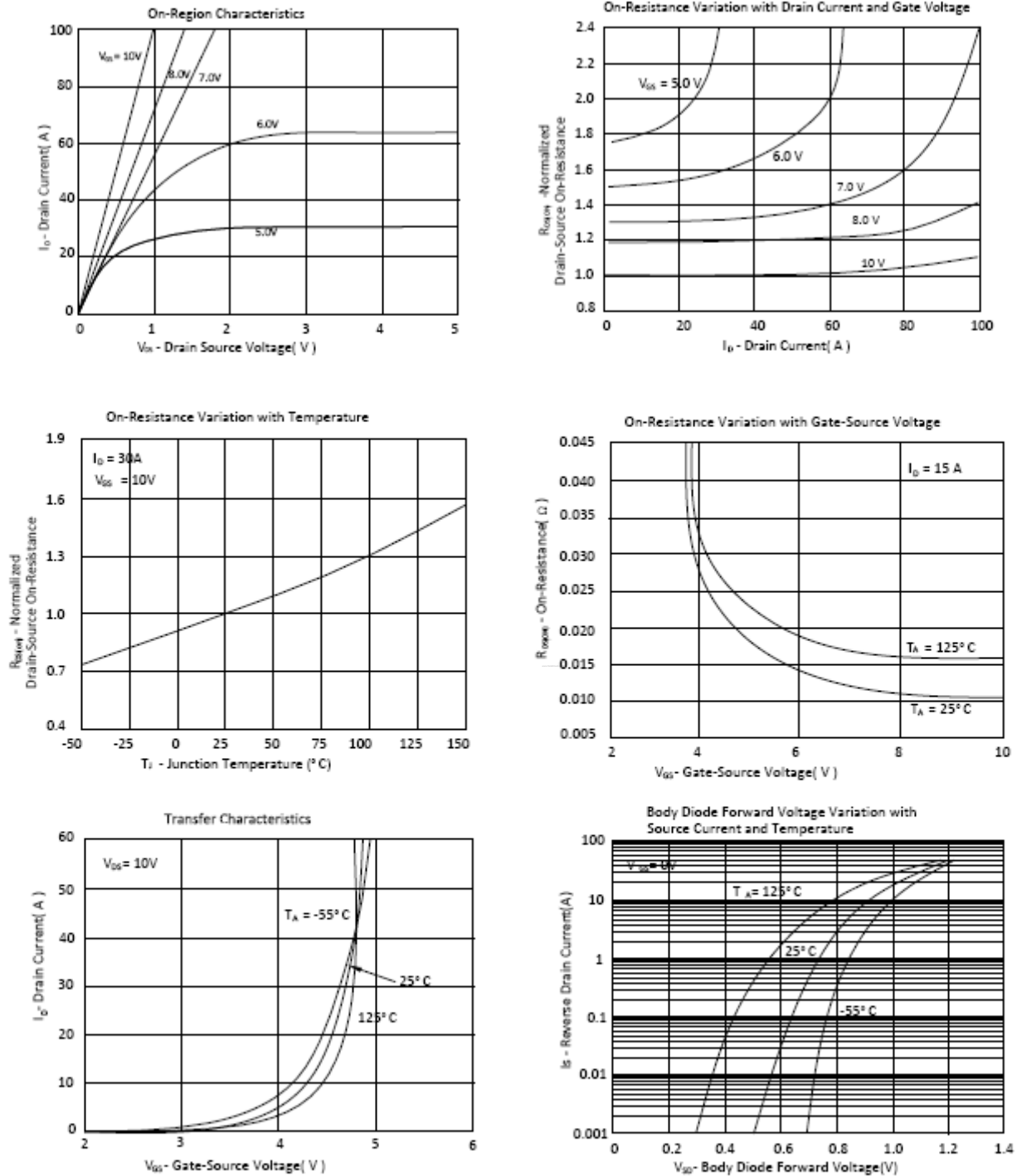
2. Independent of operating temperature

3. Pulse width limited by maximum junction temperature.

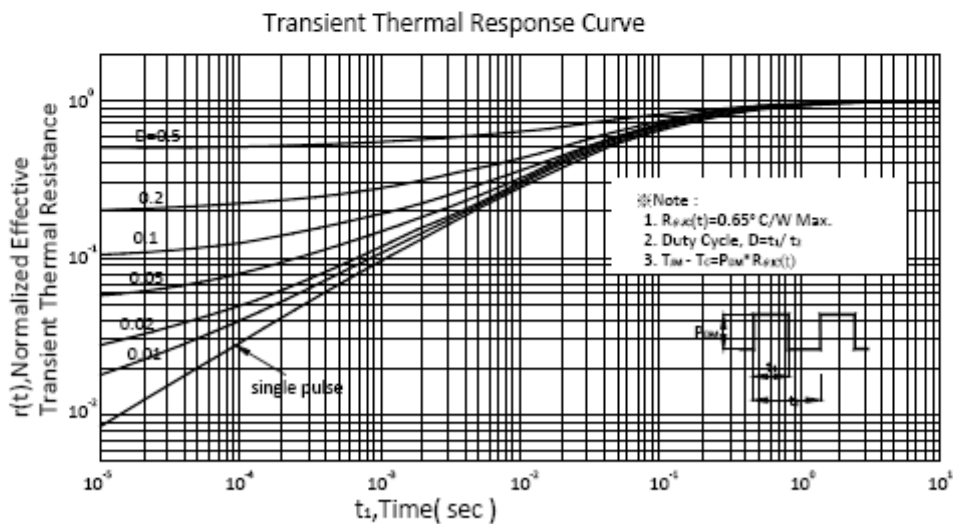
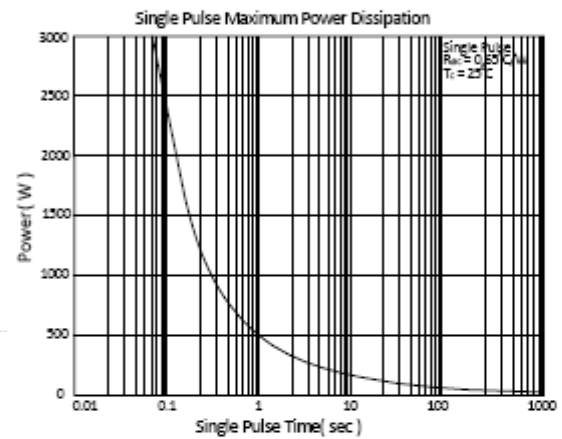
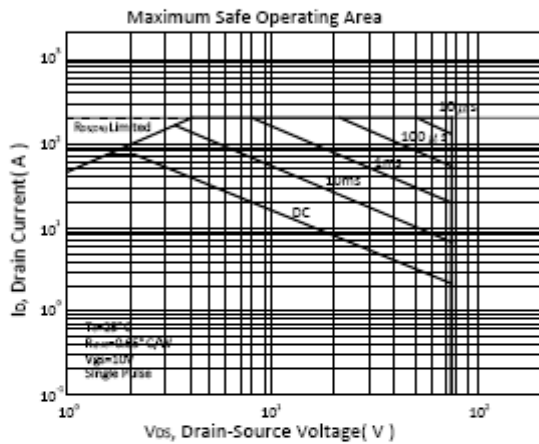
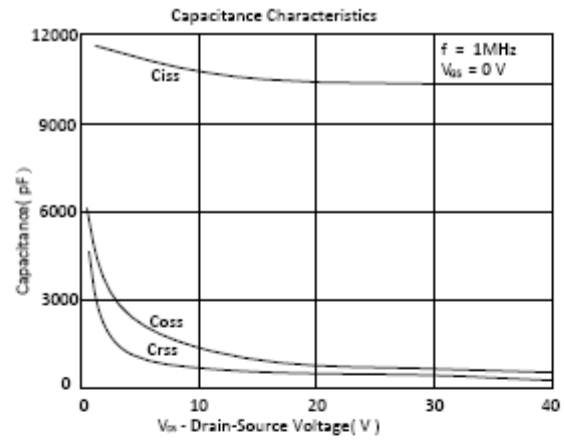
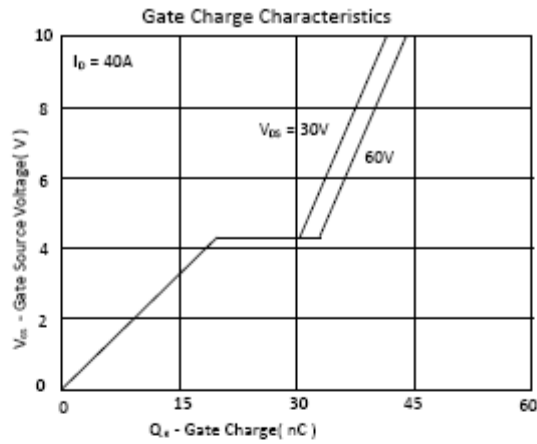
Ordering Information

Device	Package	Shipping	Marking
MTN1308E3	TO-220 (RoHS compliant)	50 pcs/tube, 20 tubes/box, 4 boxes / carton	13N08

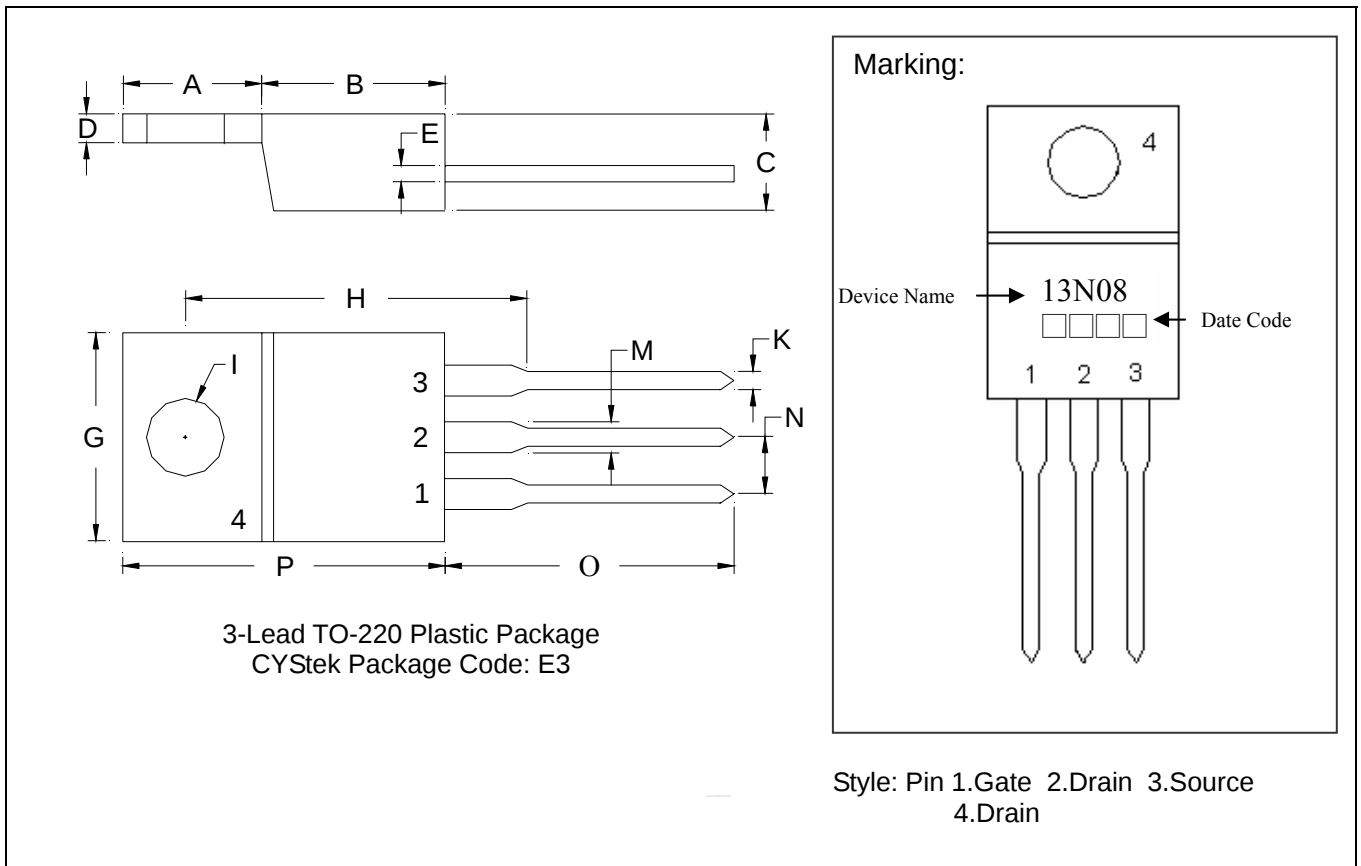
Characteristic Curves



Characteristic Curves(Cont.)



TO-220 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.2441	0.2598	6.20	6.60	I	-	*0.1508	-	*3.83
B	0.3386	0.3543	8.60	9.00	K	0.0299	0.0394	0.76	1.00
C	0.1732	0.1890	4.40	4.80	M	0.0461	0.0579	1.17	1.47
D	0.0492	0.0571	1.25	1.45	N	-	*0.1000	-	*2.54
E	0.0142	0.0197	0.36	0.50	O	0.5217	0.5610	13.25	14.25
G	0.3858	0.4094	9.80	10.40	P	0.5787	0.6024	14.70	15.30
H	-	*0.6398	-	*16.25					

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

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