

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

MTP9435BDYQ8

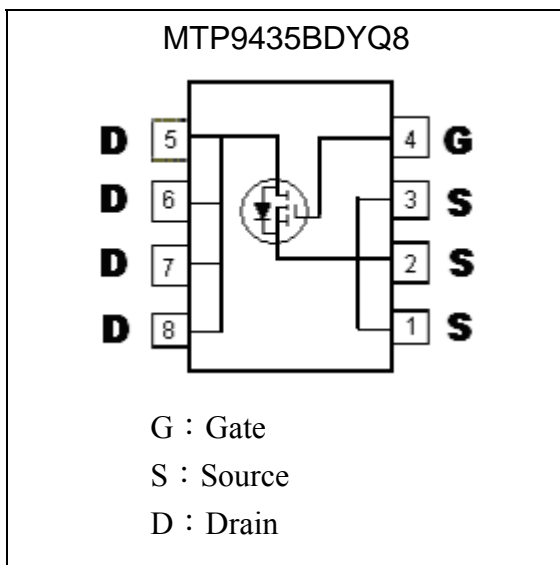
Description

The MTP9435BDYQ8 is a P-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

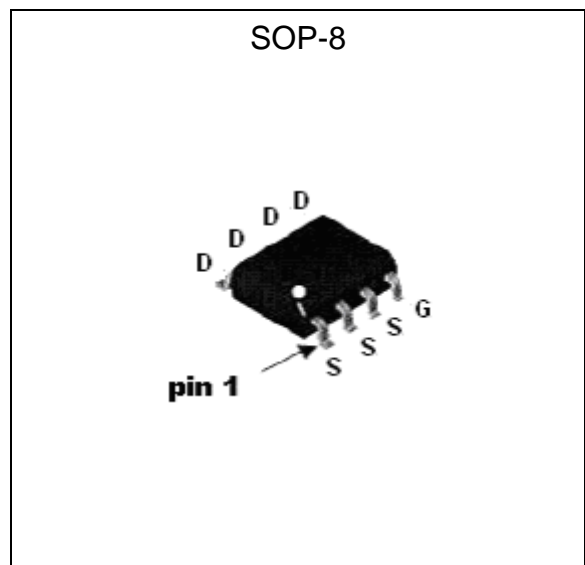
Features

- $R_{DS(ON)}=36m\Omega @V_{GS}=-10V, I_D=-5.3A$
 $R_{DS(ON)}=55m\Omega @V_{GS}=-4.5V, I_D=-4.2A$
- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free package

Equivalent Circuit



Outline





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	-30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (Note 1)	I _D	-5.3	A
Pulsed Drain Current (Note 2)	I _{DM}	-24	A
Total Power Dissipation (Note 1)	P _d	2.5	W
Linear Derating Factor		0.02	W / °C
Operating Junction Temperature	T _j	-55~+150	°C
Storage Temperature	T _{stg}	-55~+150	°C
Thermal Resistance, Junction-to-Ambient (Note 1)	R _{th,j-a}	50	°C/W

Note : 1.Surface mounted on FR-4 board, t≤10sec.
 2.Pulse width ≤300μs, Duty Cycle≤2%

Electrical Characteristics (Tj=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	-	-2.5	V	V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0
I _{DSS}	-	-	-1	μA	V _{DS} =-30V, V _{GS} =0
*R _{DS(ON)}	-	-	36	mΩ	I _D =-5.3A, V _{GS} =-10V
	-	-	55		I _D =-4.2A, V _{GS} =-4.5V
*G _{FS}	-	5	-	S	V _{DS} =-5V, I _D =-5.3A
Dynamic					
C _{iSS}	-	582	-	pF	V _{DS} =-15V, V _{GS} =0, f=1MHz
C _{oSS}	-	125	-		
C _{rSS}	-	86	-		
*t _{d(ON)}	-	9	-	ns	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V, R _G =6Ω, R _D =15Ω
*t _r	-	10	-		
*t _{d(OFF)}	-	37	-		
*t _f	-	23	-		
*Q _g	-	11.7	-	nC	V _{DS} =-15V, V _{GS} =-10V, I _D =-5.3A
*Q _{gs}	-	2.1	-		
*Q _{gd}	-	2.9	-		
Source Drain Diode					
*V _{SD}	-	-0.84	-1.2	V	V _{GS} =0V, I _S =-1.7A

*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Characteristic Curves

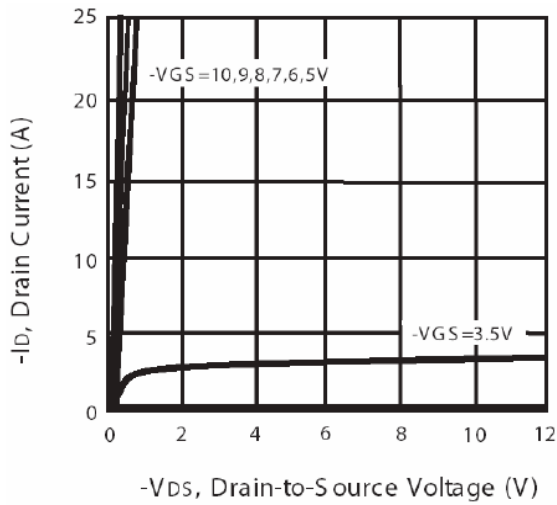


Fig 1. Typical Output Characteristics

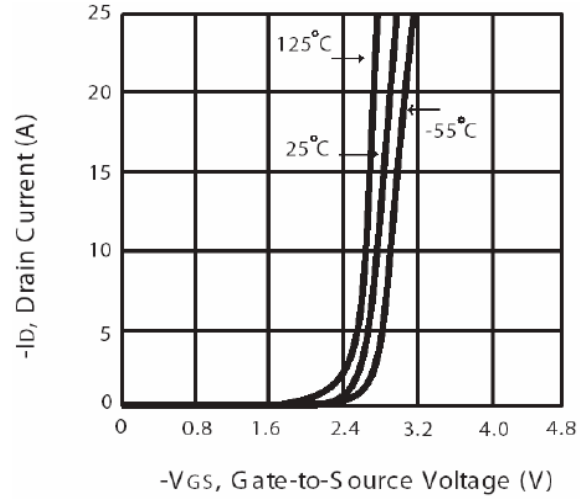


Fig 2. Transfer Characteristics

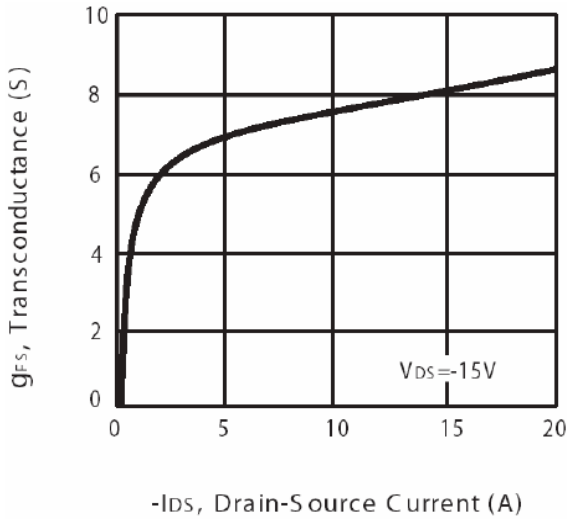


Fig 3. Transconductance v.s. Drain Current

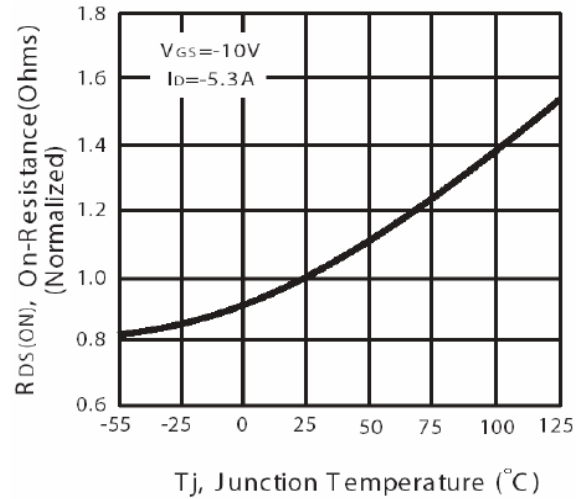


Fig 4. On-Resistance v.s. Junction Temperature

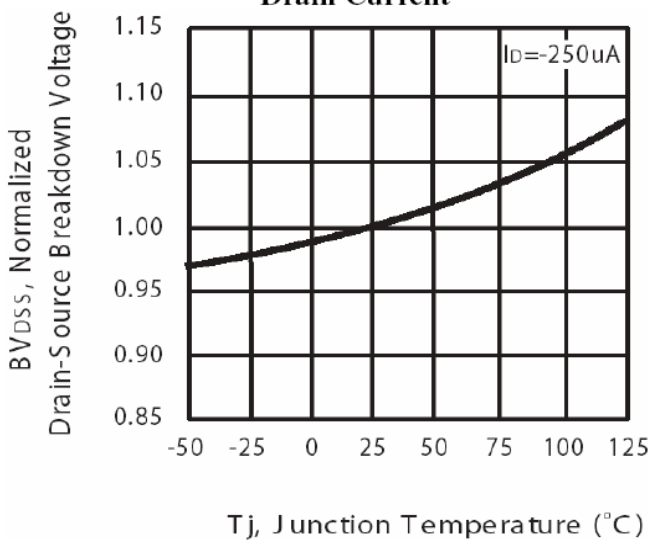


Fig 5. Breakdown Voltage v.s. Junction Temperature

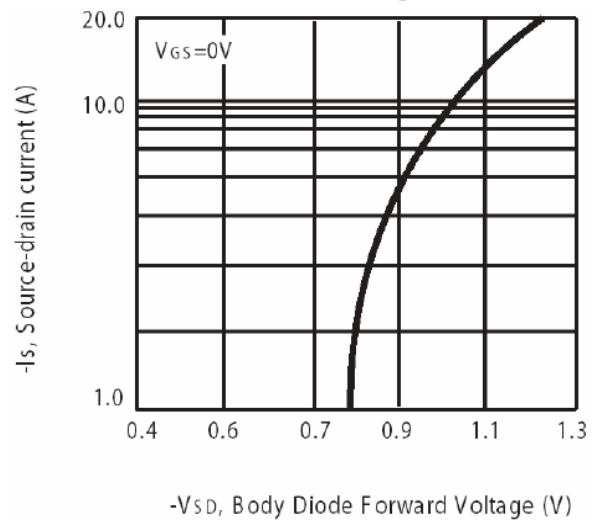


Fig 6. Body Diode Forward Voltage v.s. Source Current

Characteristic Curves(Cont.)

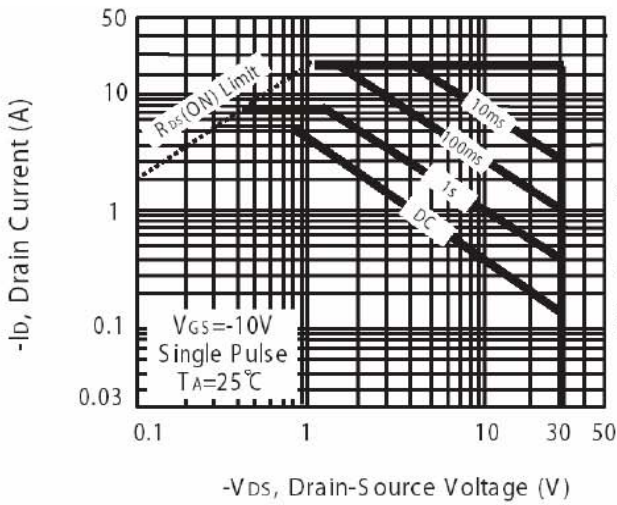


Fig 7. Maximum Safe Operating Area

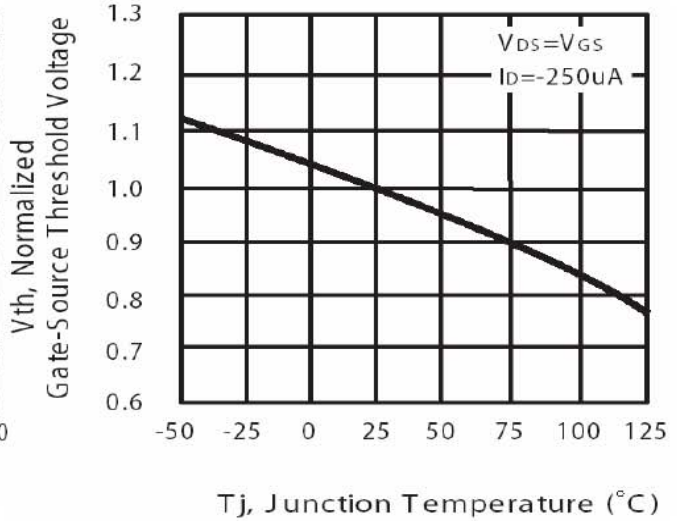


Fig 8. Gate Threshold Voltage v.s. Junction Temperature

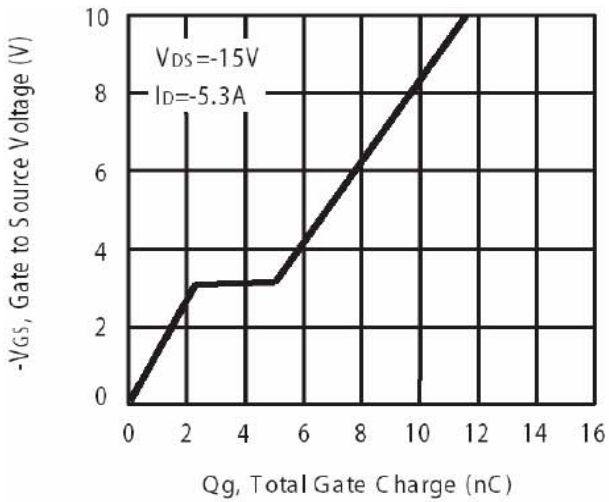


Fig 9. Gate Charge Characteristics

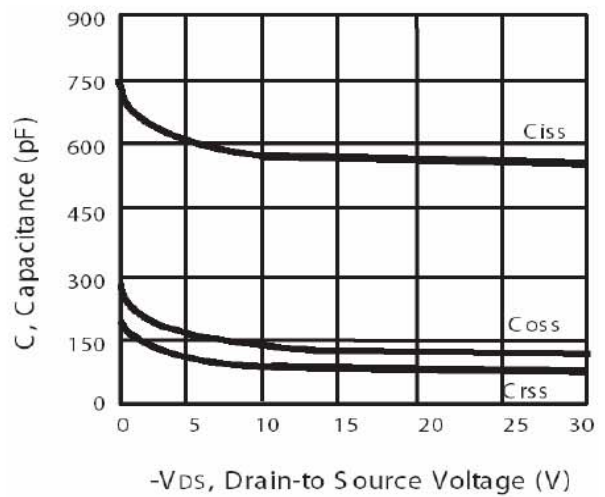


Fig 10. Typical Capacitance Characteristics

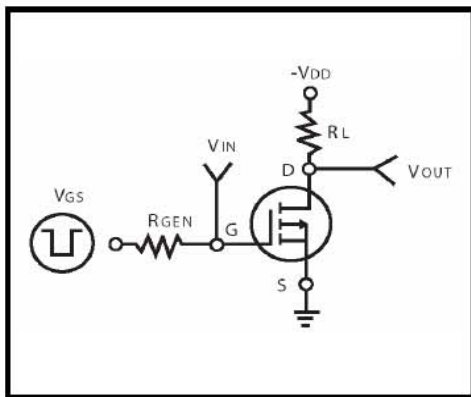


Fig 11. Switching Time Circuit

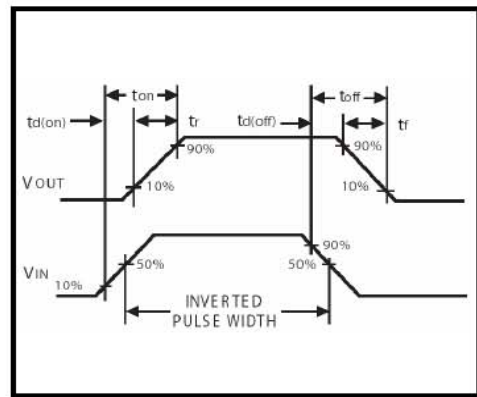


Fig 12. Switching Time Waveform

Characteristic Curves(Cont.)

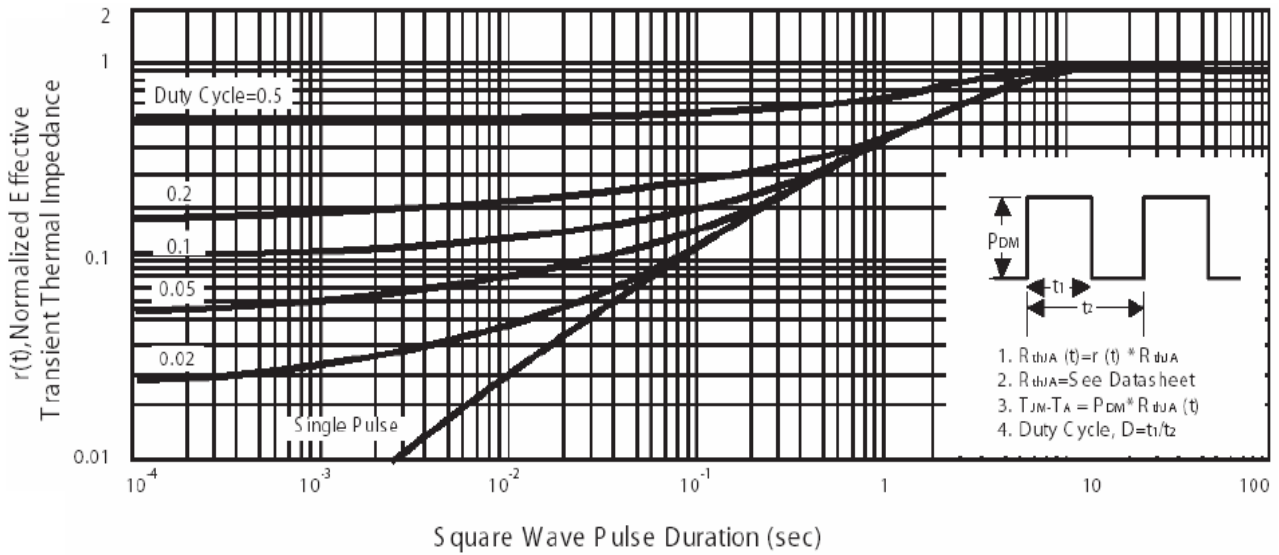
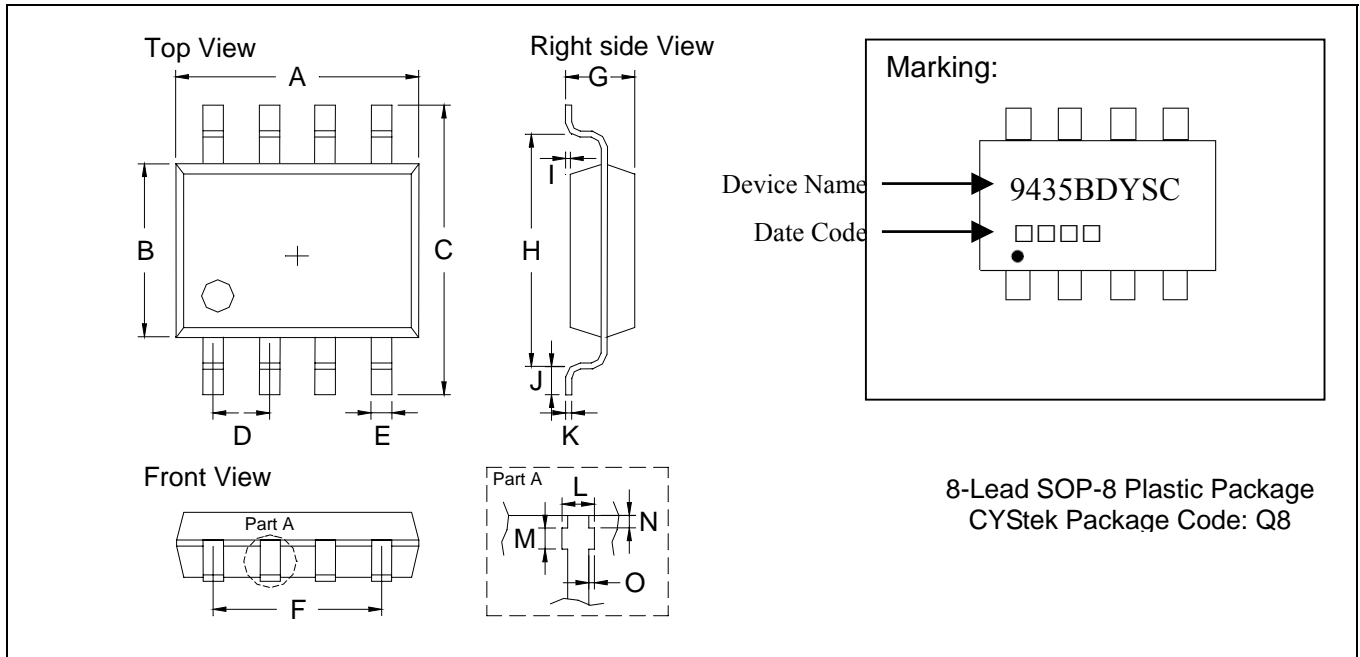


Fig 13. Normalized Thermal Transient Impedance Curve

SOP-8 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1909	0.2007	4.85	5.10	I	0.0019	0.0078	0.05	0.20
B	0.1515	0.1555	3.85	3.95	J	0.0118	0.0275	0.30	0.70
C	0.2283	0.2441	5.80	6.20	K	0.0074	0.0098	0.19	0.25
D	0.0480	0.0519	1.22	1.32	L	0.0145	0.0204	0.37	0.52
E	0.0145	0.0185	0.37	0.47	M	0.0118	0.0197	0.30	0.50
F	0.1472	0.1527	3.74	3.88	N	0.0031	0.0051	0.08	0.13
G	0.0570	0.0649	1.45	1.65	O	0.0000	0.0059	0.00	0.15
H	0.1889	0.2007	4.80	5.10					

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: 42 Alloy; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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