

N-Channel Enhancement Mode Field Effect Transistor

Product Summary

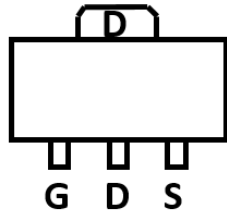
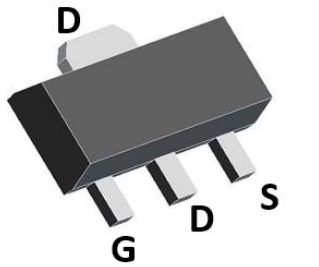
• V_{DS}	20 V
• I_D	10 A
• $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	<11 mohm
• $R_{DS(ON)}$ (at $V_{GS}=2.5V$)	<15 mohm
• $R_{DS(ON)}$ (at $V_{GS}=1.8V$)	<20 mohm

General Description

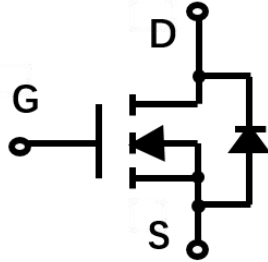
- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions



SOT-89



■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	10	A
	$T_A=70^\circ\text{C}$		8	
Pulsed Drain Current ^A		I_{DM}	43	A
Total Power Dissipation	$T_A=25^\circ\text{C}$	P_D	1.5	W
	$T_C=25^\circ\text{C}$		4.0	
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	83	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	31	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJH10N02A	F1	YJH10N02A	1000	10000	40000	7" reel



YJH10N02A

■ Electrical Characteristics (T_j=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.4	0.62	1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 4.5V, I _D =5A		7	11	mΩ
		V _{GS} = 2.5V, I _D =3A		8.5	15	
		V _{GS} = 1.8V, I _D =2A		13	20	
Diode Forward Voltage	V _{SD}	I _S =10A,V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				10	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f=1MHZ		2450		pF
Output Capacitance	C _{oss}			430		
Reverse Transfer Capacitance	C _{rss}			205		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =4.5V,V _{DS} =10V,I _D =3A		65		nC
Gate-Source Charge	Q _{gs}			15		
Gate-Drain Charge	Q _{gd}			13		
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V,V _{DD} =10V,R _L =6.4Ω R _{GEN} =3Ω		12		ns
Turn-on Rise Time	t _r			26		
Turn-off Delay Time	t _{D(off)}			35		
Turn-off fall Time	t _f			10		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



■ Typical Performance Characteristics

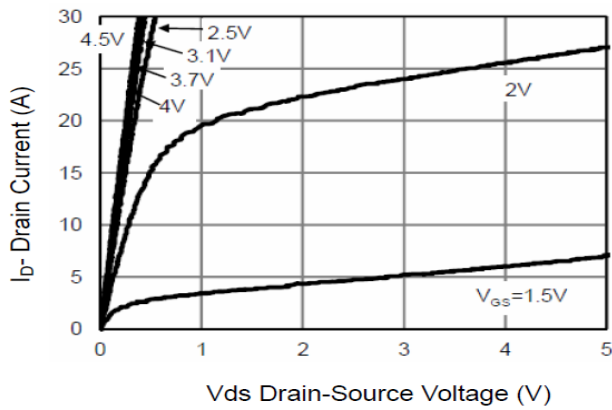


Figure1. Output Characteristics

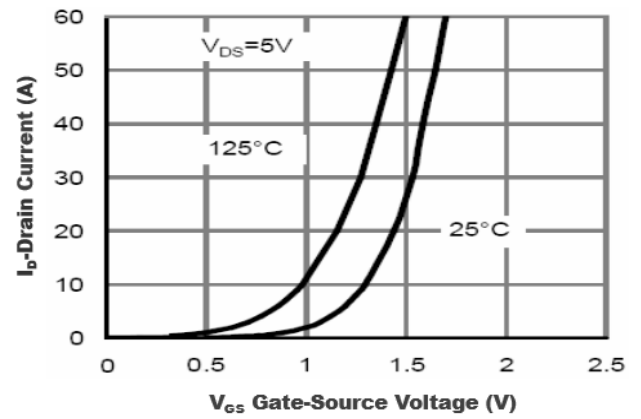


Figure2. Transfer Characteristics

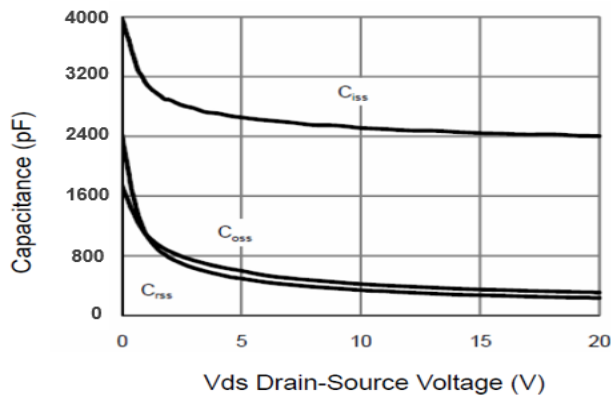


Figure3. Capacitance Characteristics

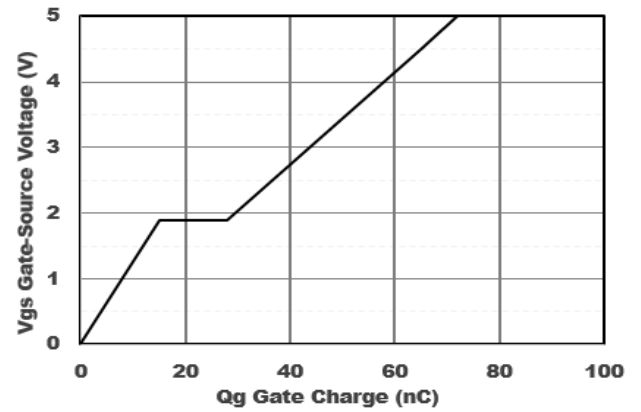


Figure4. Gate Charge

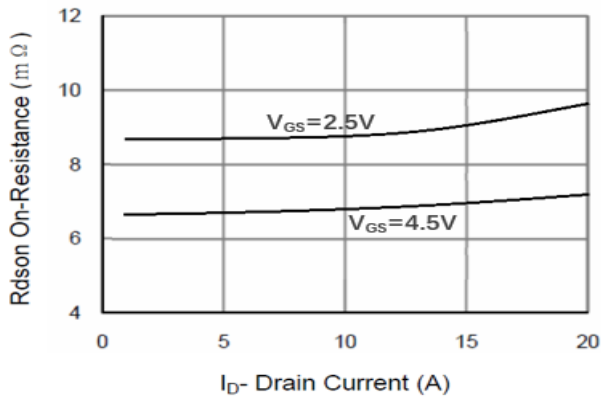


Figure5. Drain-Source on Resistance

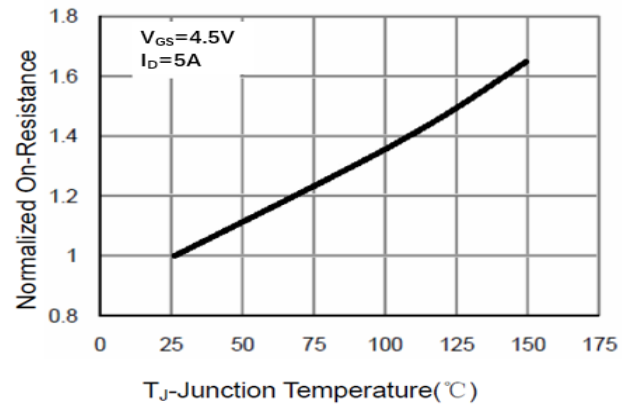


Figure6. Drain-Source on Resistance

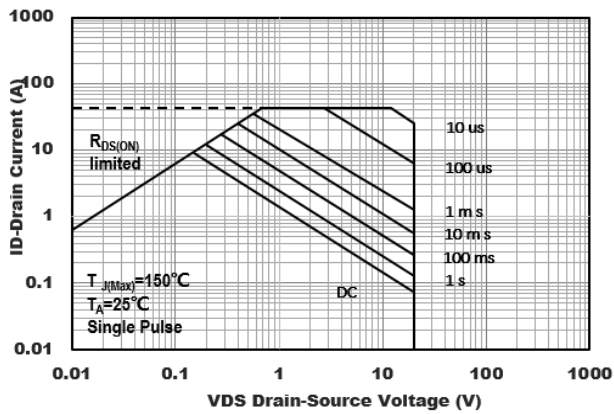


Figure7. Safe Operation Area

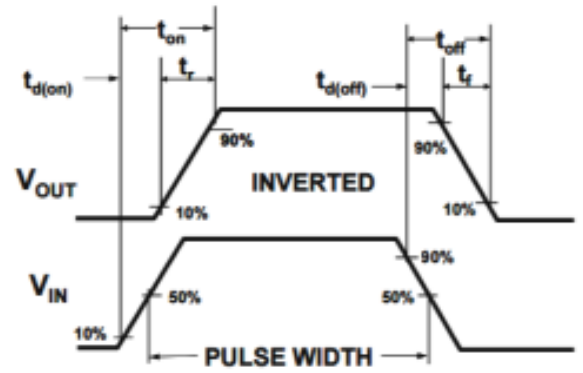
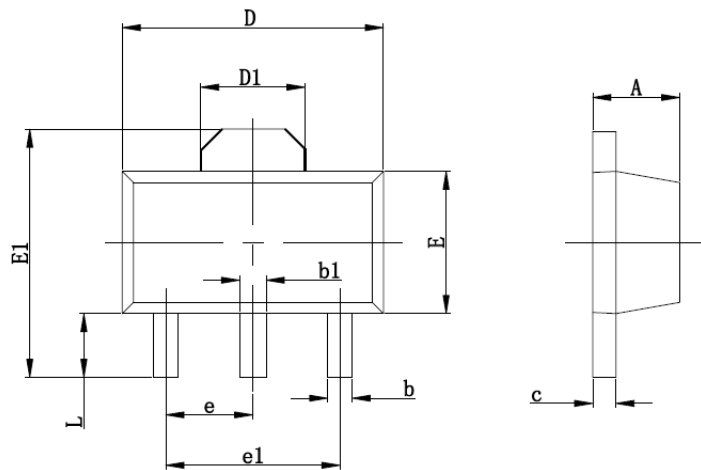


Figure8. Switching wave



■ SOT-89 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.350	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.350	2.550	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.100	0.035	0.047



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