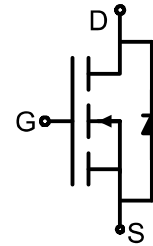


Feature

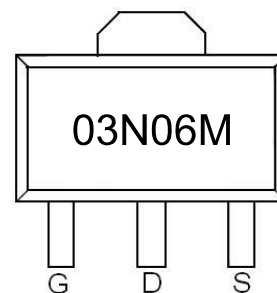
- 60V,3A
 $R_{DS(ON)} < 80m\Omega @ V_{GS}=10V$ TYP=55 m Ω
 $R_{DS(ON)} < 90m\Omega @ V_{GS}=4.5V$ TYP=70m Ω
- Advanced Trench Technology
- Lead free product is acquired



Schematic diagram

Application

- Interfacing Switching
- Load Switching
- Power management



SOT-89 -3L top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
03N06M	AP03N06M	Sot-89-3L	7 inch	-	1000

ABSOLUTE MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current (T _a =25°C)	I _D	3	A
Continuous Drain Current (T _a =70°C)	I _D	2.3	A
Pulsed Drain Current	I _{DM}	12	A
Power Dissipation	P _D	1.38	W
Thermal Resistance from Junction to Ambient ⁽⁴⁾	R _{θJA}	90	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

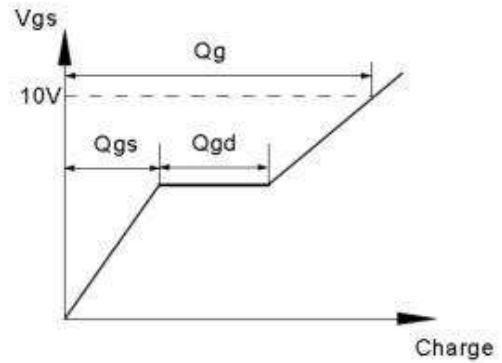
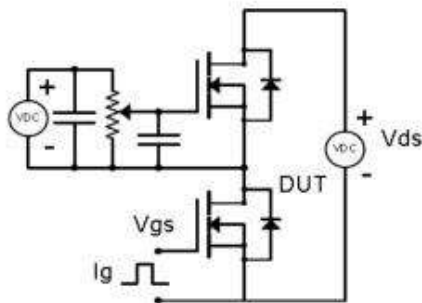
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =3A	-	55	80	mΩ
		V _{GS} =4.5V, I _D =2A	-	75	90	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz	-	460	-	pF
Output Capacitance	C _{oss}		-	35	-	
Reverse Transfer Capacitance	C _{rss}		-	30	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =30V, I _D =1A, V _{GS} =10V, R _G =3.3Ω	-	5	-	ns
Turn-on rise time	t _r		-	6	-	
Turn-off delay time	t _{d(off)}		-	17	-	
Turn-off fall time	t _f		-	3.5	-	
Total Gate Charge	Q _g	V _{DS} =30V, I _D =3A, V _{GS} =4.5V	-	6	-	nC
Gate-Source Charge	Q _{gs}		-	1.5	-	
Gate-Drain Charge	Q _{gd}		-	3.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =3A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	3.0	A

Notes:

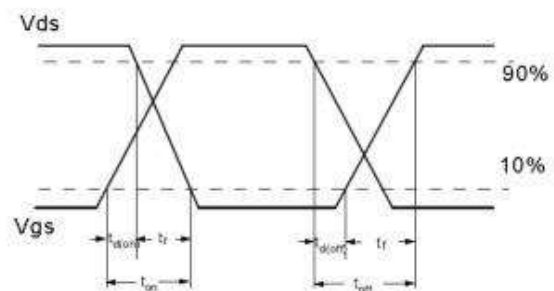
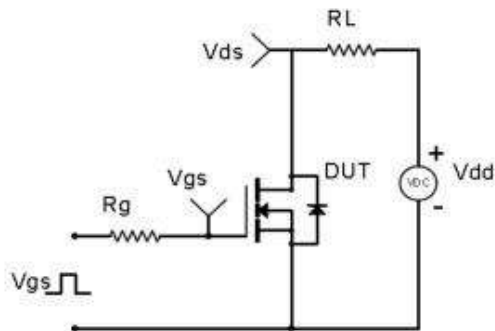
1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width≤300μs, duty cycle≤2%
3. Surface Mounted on FR4 Board,t≤10 sec

Test Circuit & Waveform

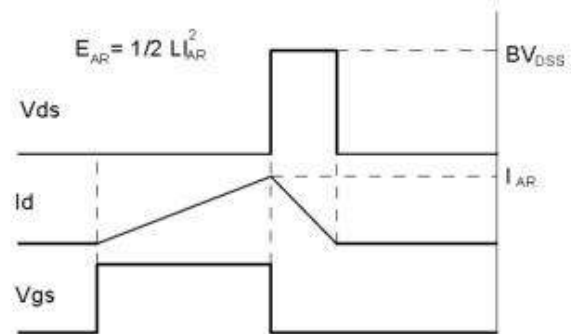
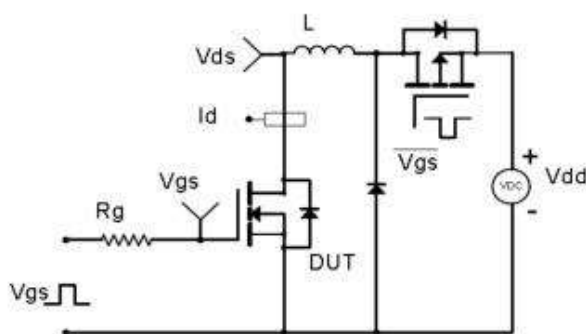
Gate Charge Test Circuit & Waveform



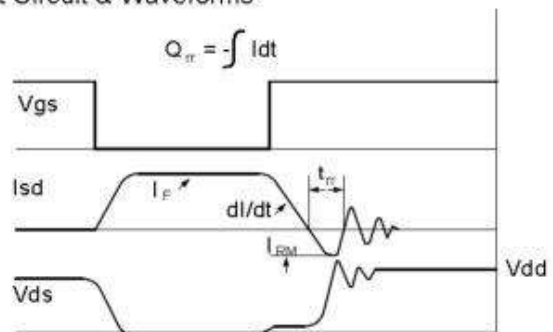
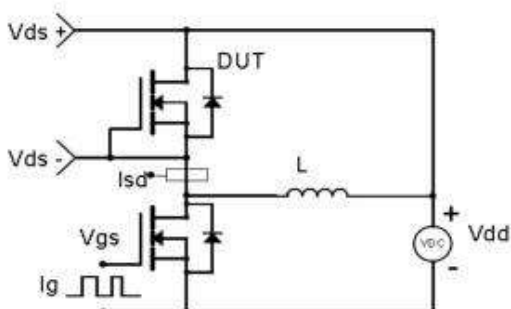
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



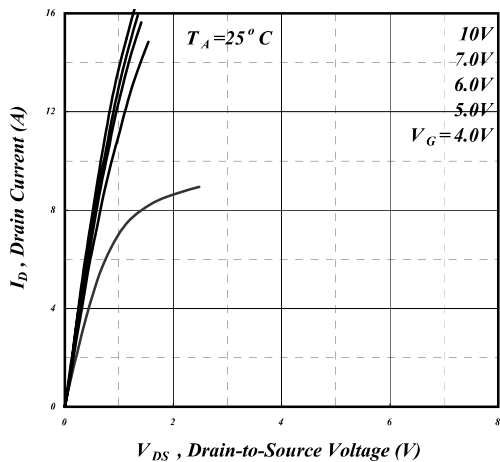


Fig 1. Typical Output Characteristics

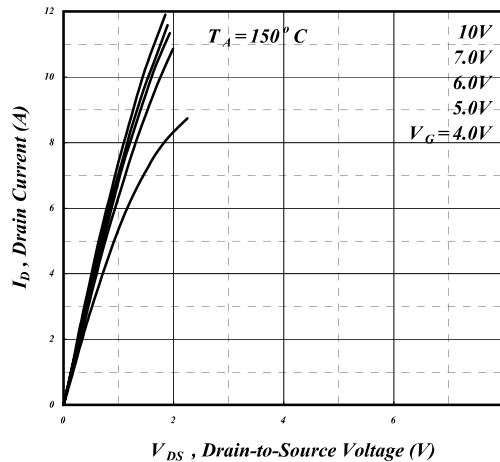


Fig 2. Typical Output Characteristics

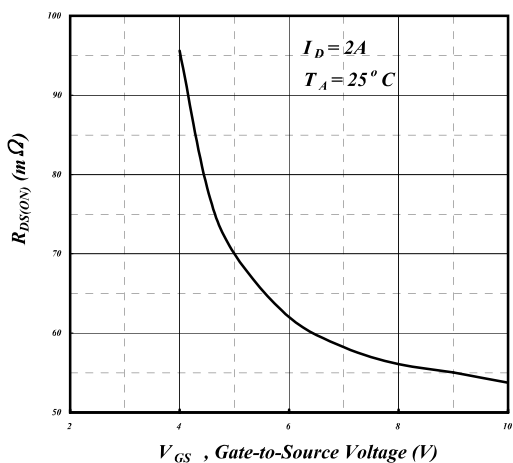


Fig 3. On-Resistance v.s. Gate Voltage

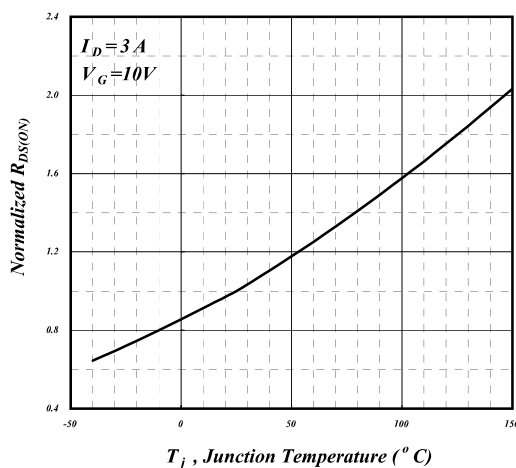


Fig 4. Normalized On-Resistance v.s. Junction Temperature

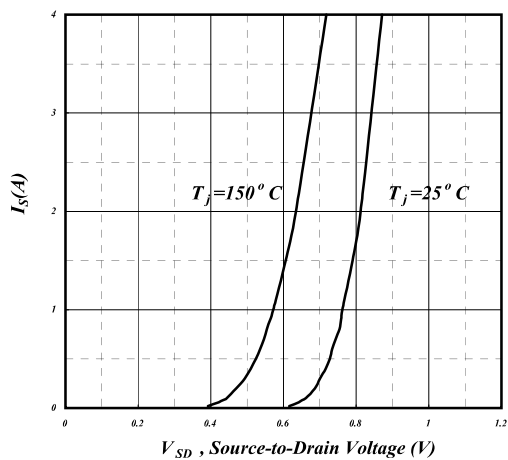


Fig 5. Forward Characteristic of Reverse Diode

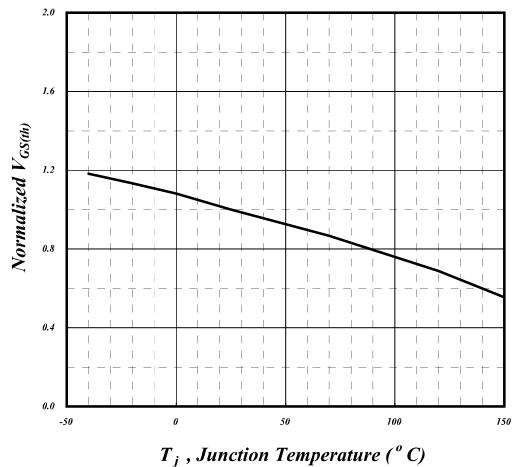


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

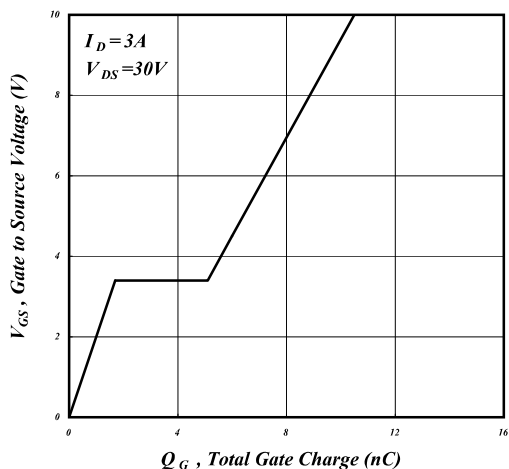


Fig 7. Gate Charge Characteristics

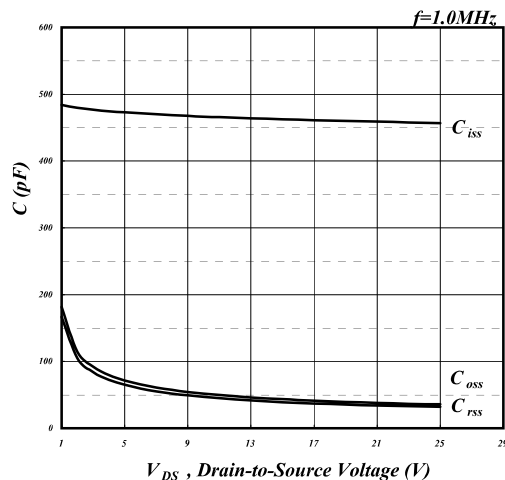


Fig 8. Typical Capacitance Characteristics

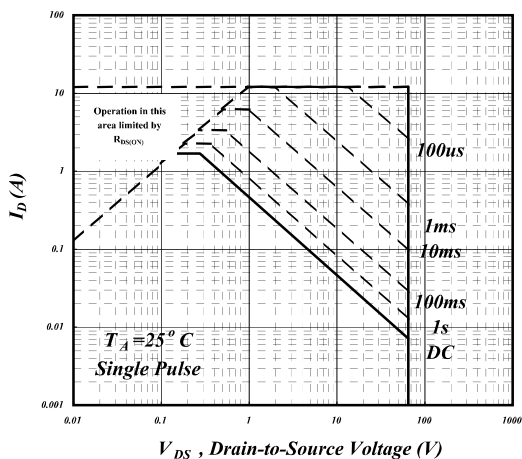


Fig 9. Maximum Safe Operating Area

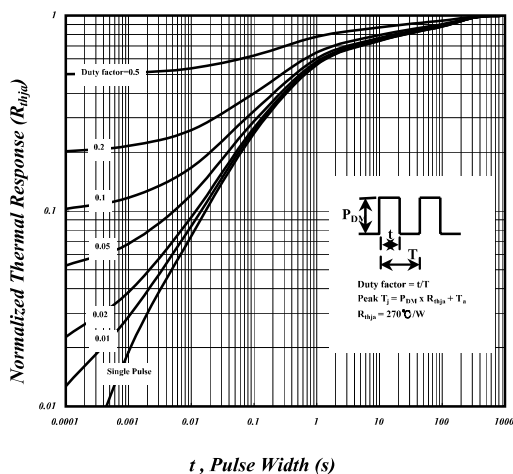


Fig 10. Effective Transient Thermal Impedance

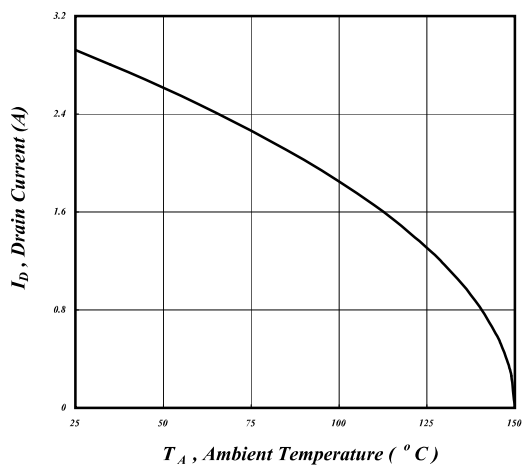


Fig 11. Maximum Continuous Drain Current v.s. Ambient Temperature

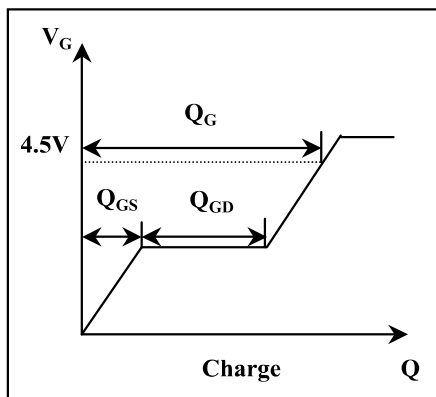
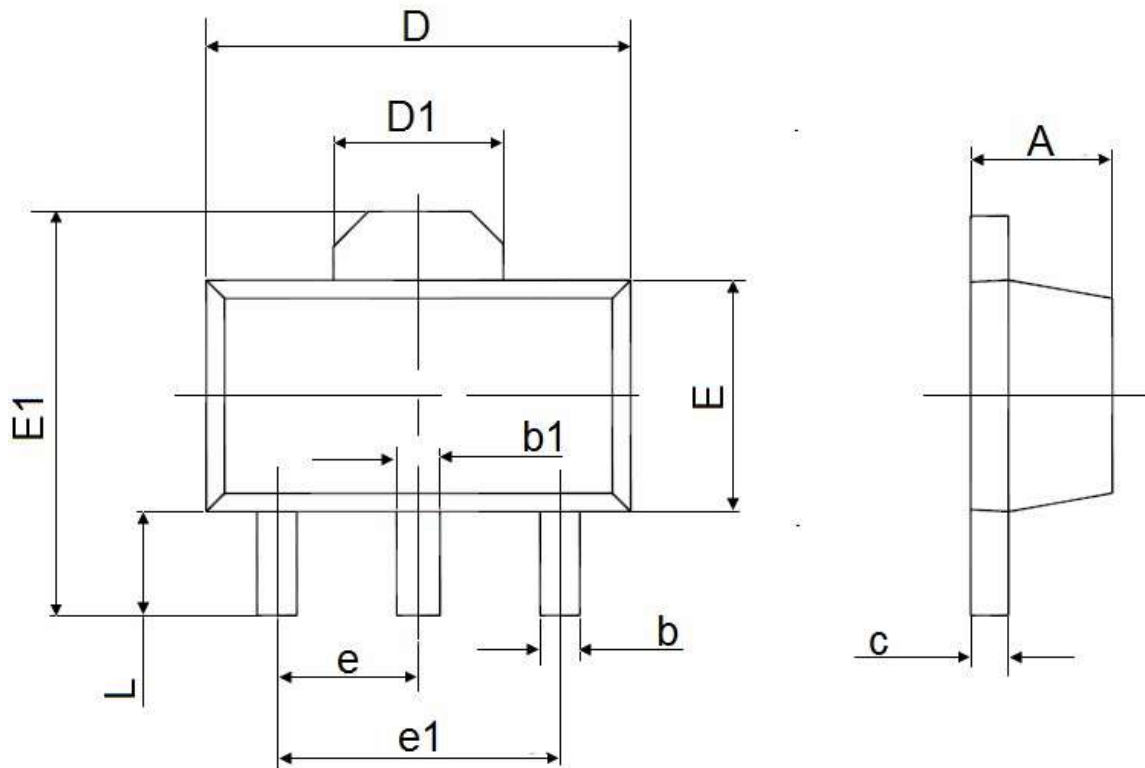


Fig 12. Gate Charge Waveform

SOT-89-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
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	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047