

● **General Description**

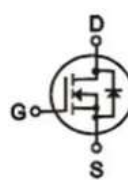
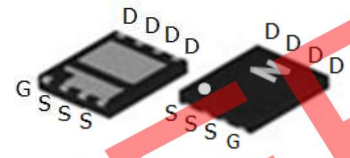
The AP045N03M combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . This device is ideal for load switch and battery protection applications.

● **Features**

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

● **Application**

- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

	<p><math>V_{DS} = 30V</math></p> <p><math>R_{DS(ON)} = 5.0m\Omega</math></p> <p><math>I_D = 75A</math></p>
 <p style="text-align: center;">DFN3 x 3</p>	

■ RoHS COMPLIANT

● **Ordering Information:**

Marking	75N03
Packing	REEL TAPE
Basic ordering unit (pcs)	3000
Normal Package Material Ordering Code	AP045N03M-TAP
Halogen Free Ordering Code	AP045N03M-TAP-HF

● **Absolute Maximum Ratings** (  $T_C = 25^\circ C$  )

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current( $T_C=25^\circ C$ )	$I_D$	75	A
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	180	A
Total Power Dissipation( $T_C=25^\circ C$ )	$P_D@T_C=25^\circ C$	19	W
Total Power Dissipation( $T_A=25^\circ C$ )	$P_D@T_A=25^\circ C$	0.9	W
Operating Junction Temperature	$T_J$	-55 to 150	$^\circ C$
Storage Temperature	$T_{STG}$	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy	$E_{AS}$	260	mJ

● **Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	$R_{thJC}$	-	-	6.5	° C/W
Thermal resistance, junction - ambient	$R_{thJA}$	-	-	130	° C/W
Soldering temperature, wavesoldering for 10s	$T_{sold}$	-	-	265	° C

● **Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1.0		2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 20A$		5.0	6.5	m $\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		8.0	10.5	m $\Omega$
Forward Trans conductance	$g_{FS}$	$V_{DS} = 25V, I_D = 10A$		16		S

● **Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	$C_{iss}$	f = 1MHz	-	1500	-	pF
Output capacitance	$C_{oss}$		-	280	-	
Reverse transfer capacitance	$C_{rss}$		-	140	-	

● **Gate Charge characteristics**( $T_a = 25^\circ C$ )

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD} = 25V$	-	16	-	nC
Gate - Source charge	$Q_{gs}$	$I_D = 8A$	-	5	-	
Gate - Drain charge	$Q_{gd}$	$V_{GS} = 10V$	-	8	-	

Note: ① Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$  ;

Fig.1 Power Dissipation

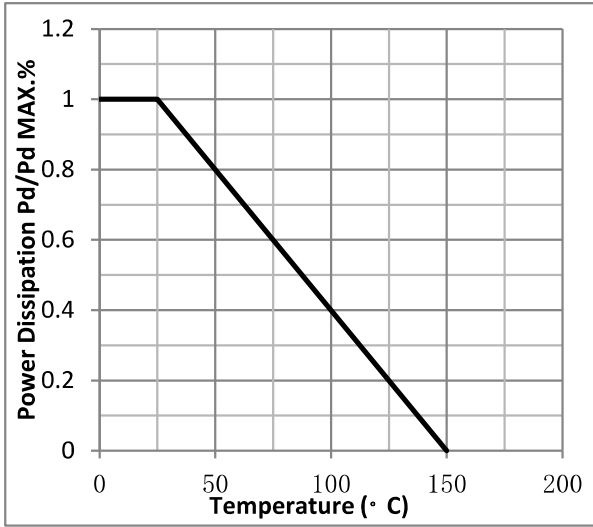


Fig.2 Typical output Characteristics

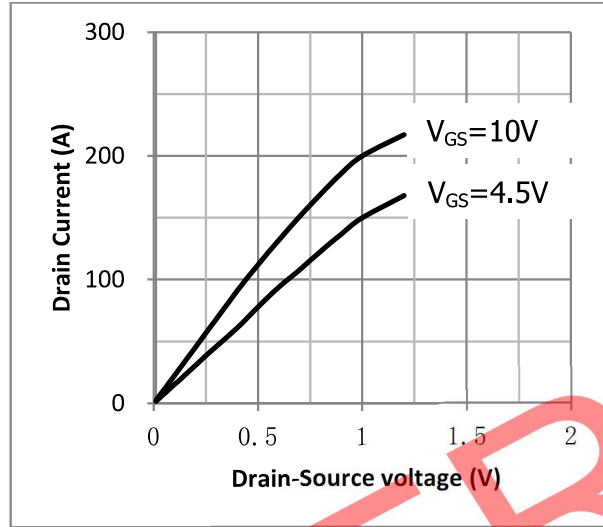


Fig.3 Threshold Voltage V<sub>GS(th)</sub> V.S Junction Temperature

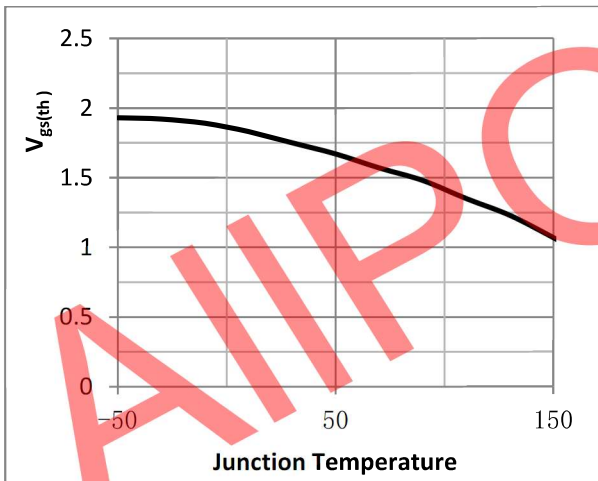


Fig.4 Resistance V.S Drain Current

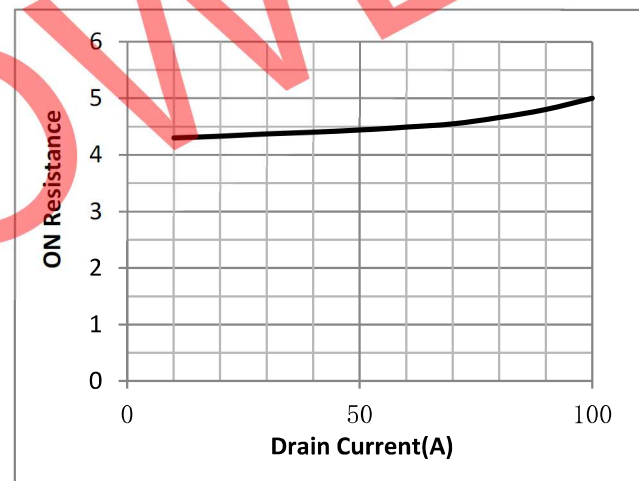


Fig.5 On-Resistance VS Gate Source Voltage

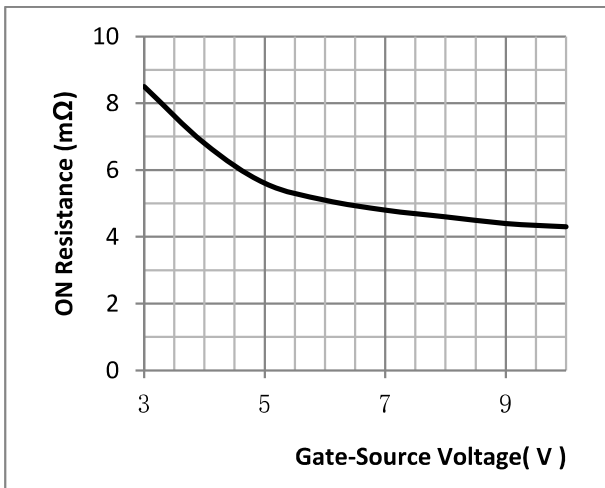


Fig.6 On-Resistance V.S Junction Temperature

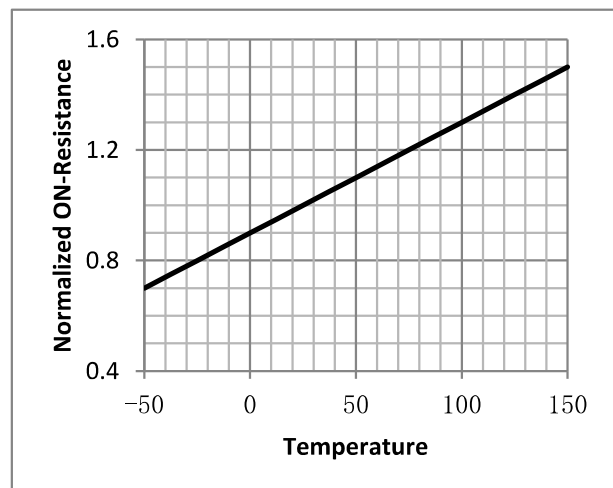


Fig.7 Switching Time Measurement Circuit

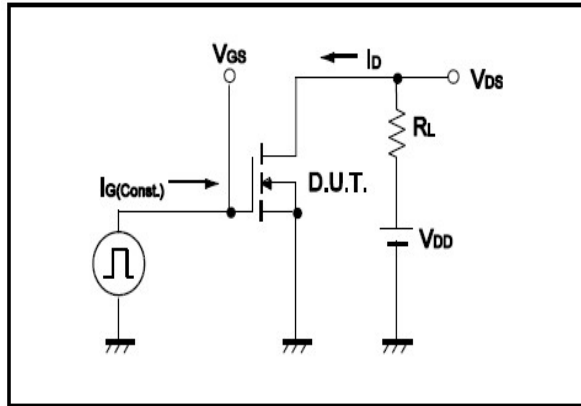


Fig.8 Gate Charge Waveform

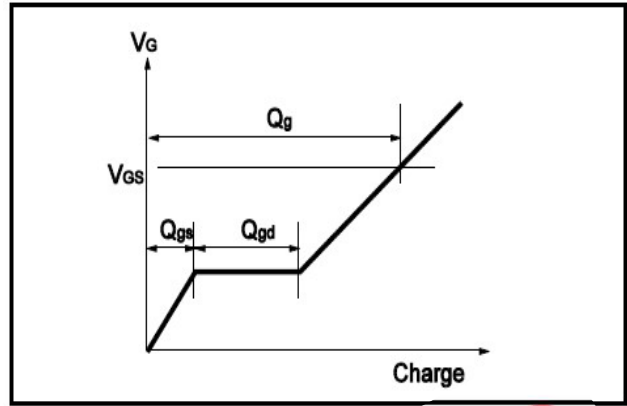


Fig.9 Switching Time Measurement Circuit

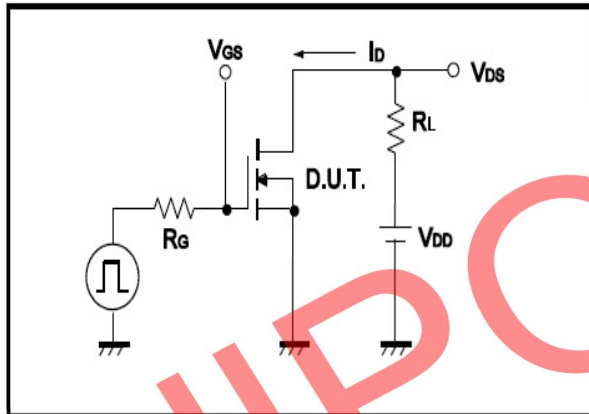


Fig.10 Gate Charge Waveform

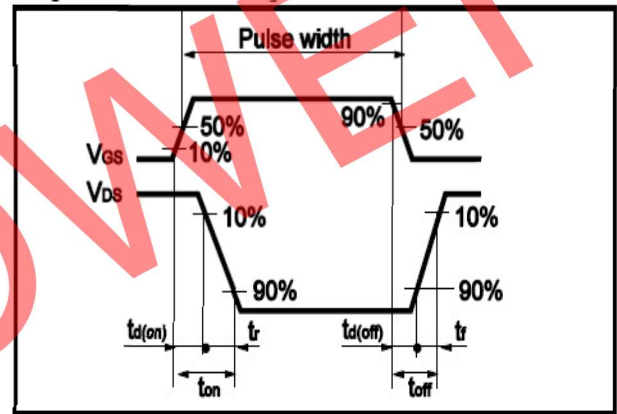


Fig.11 Avalanche Measurement Circuit

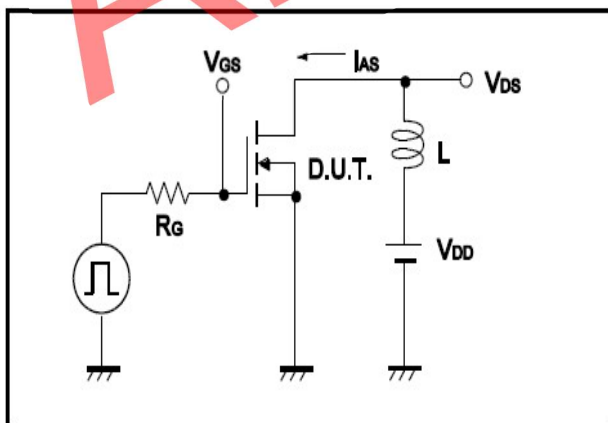
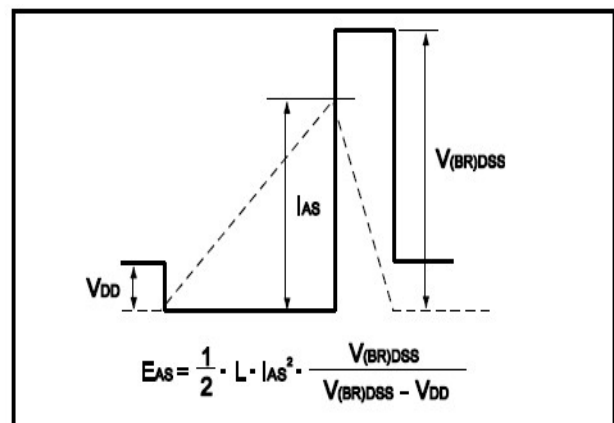
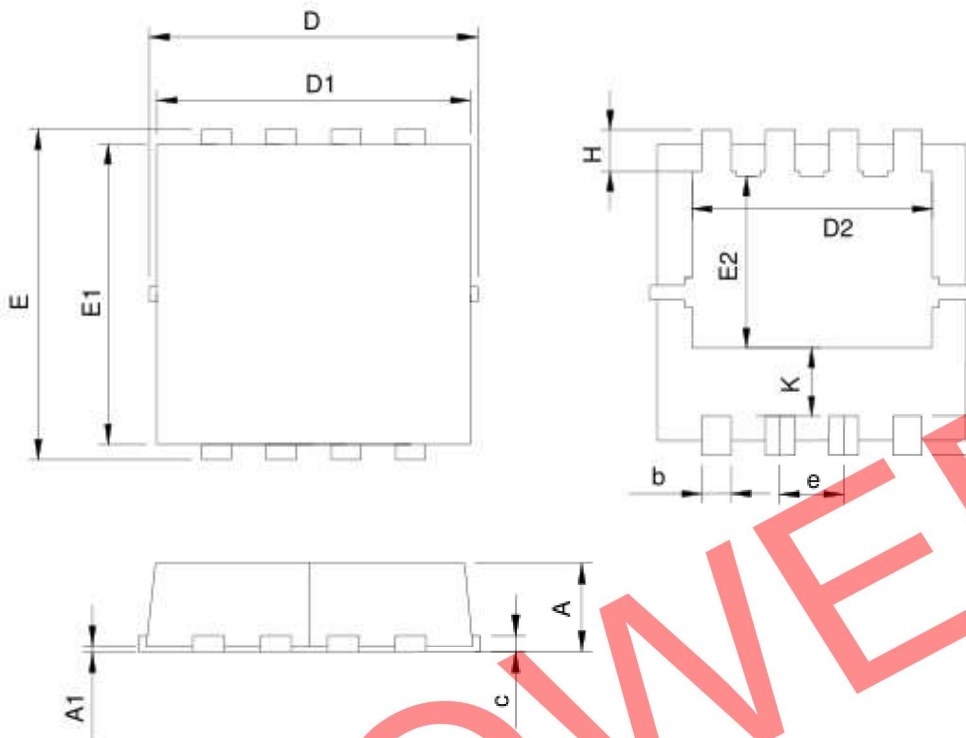


Fig.12 Avalanche Waveform



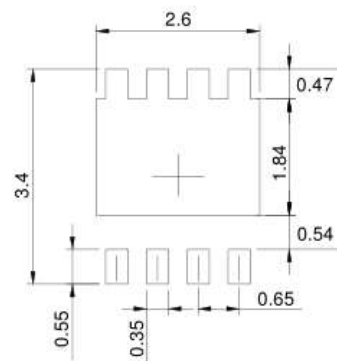
N-Channel Enhancement Mode Power MOSFET

•Dimensions(DFN3×3)



L C O M M O N	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm