

Features

- High Reliability Capability
- Extremely low on-resistance $R_{DS(on)}$
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

Product Summary			
V_{DS}	$R_{DS(on)}$ (m Ω) Typ	I_D (A)	Q_g (Typ)
30V	3.5 @ 10V 12A	55	43nc

Mechanical Data

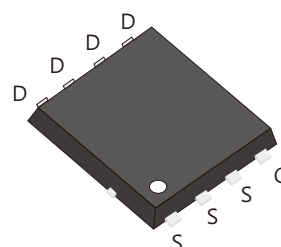
- Case:DFN3 \times 3 Package

DFN3 \times 3

D035N03G

Application

- Charger
- DC/DC converter
- Ideal for high-frequency switching and synchronous rectification



Ordering Information

Part No.	Package Type	Package	Quality(box)
D035N03Q	DFN3 \times 3	Tape & Reel	5000

Block Diagram

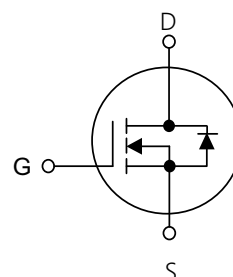


Table1 Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	55	A
		38	
Pulsed Drain Current (Note 1)	I_{DM}	240	A
Single Pulse Avalanche Energy(Note 2)	E_{AS}	150	mJ
Power Dissipation $T_C=25^\circ\text{C}$	P_D	40	W
Operating Junction and Storage Temperature	T_J/T_{STG}	-55~+150	$^\circ\text{C}$

Table 2. Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance Junction to Ambient	$R_{\theta JA}$	82	$^{\circ}\text{C}/\text{W}$
Thermal resistance Junction to Case	$R_{\theta JC}$	3	$^{\circ}\text{C}/\text{W}$

 Table 3. Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics							
Drain-Source Breakdown Voltage		BV _{DSS}	V _{GS} =0V,I _D =250μA	30	-	-	V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =30V,V _{GS} =0V	-	-	1	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =20V,V _{DS} =0V	-	-	100	nA
	Reverse		V _{GS} =-20V,V _{DS} =0V	-	-	-100	nA
On Characteristics(Note 3)							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.6	2.2	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V,I _D =12A	-	3.5	4.5	mΩ
			V _{GS} =4.5V,I _D =12A	-	6.1	8.2	
Dynamic Characteristics(Note 4)							
Input Capacitance		C _{ISS}	V _{DS} =15V,V _{GS} =0V,f=1MHz	-	2361	-	pF
Output Capacitance		C _{OSS}		-	254	-	pF
Reverse Transfer Capacitance		C _{RSS}		-	216	-	pF
Switching Characteristics (Note 4)							
Turn-On Delay Time		t _{d (on)}	V _{DS} =15V, V _{GS} =10V,R _G =3Ω,	-	9	-	ns
Turn-On Rise Time		t _r		-	16	-	ns
Turn-Off Delay Time		t _{d (off)}		-	35	-	ns
Turn-Off Fall Time		t _f		-	10	-	ns
Total Gate Charge		Q _G	V _{DS} =25V,I _D =14A, V _{GS} =10V	-	43	-	nC
Gate-Source Charge		Q _{GS}		-	8	-	nC
Gate-Drain Charge		Q _{GD}		-	11	-	nC
Drain-Source Diode Characteristics and Maximum Ratings							
Drain-Source Diode Forward Voltage		V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V

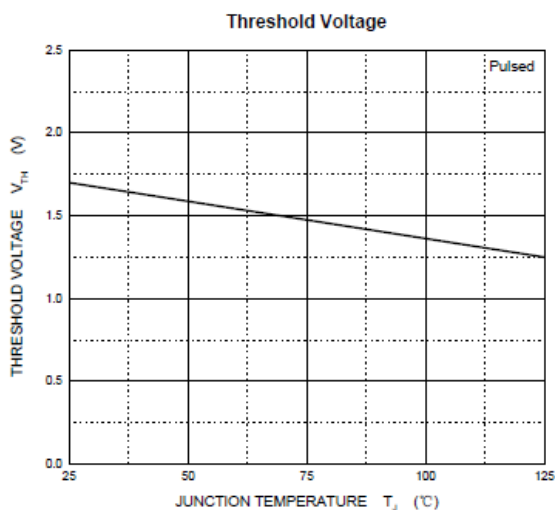
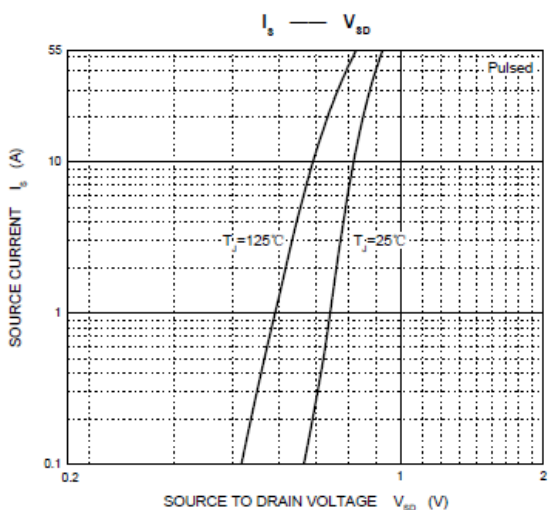
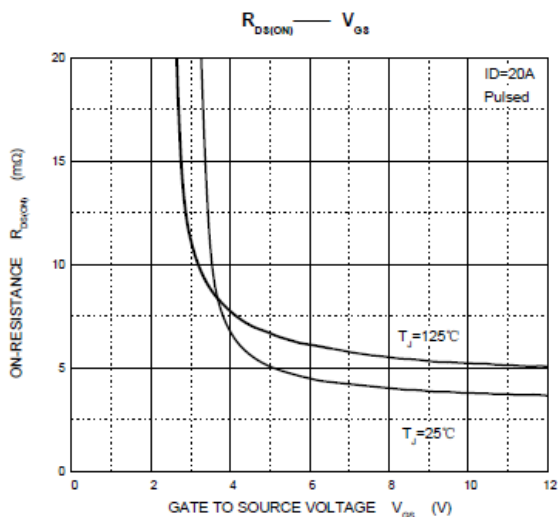
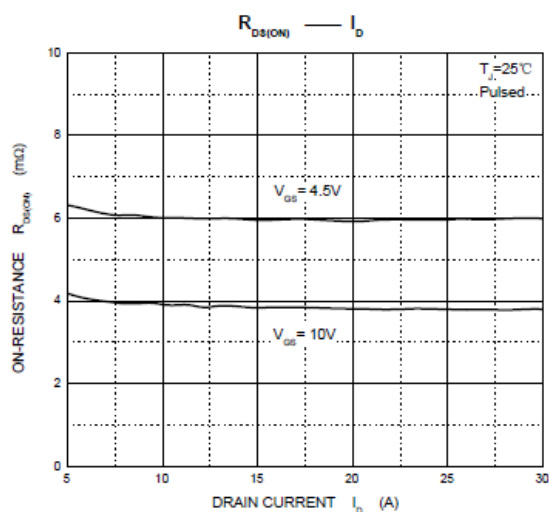
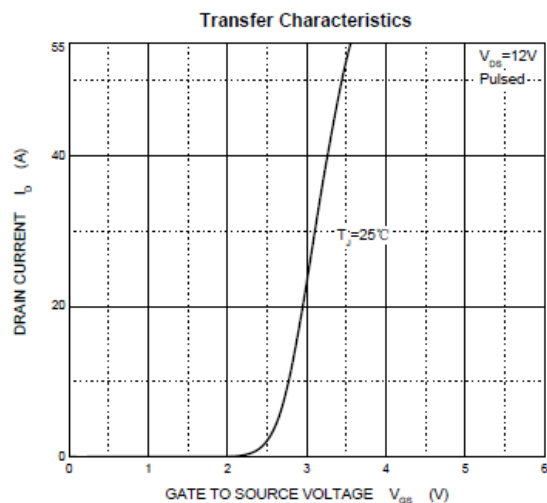
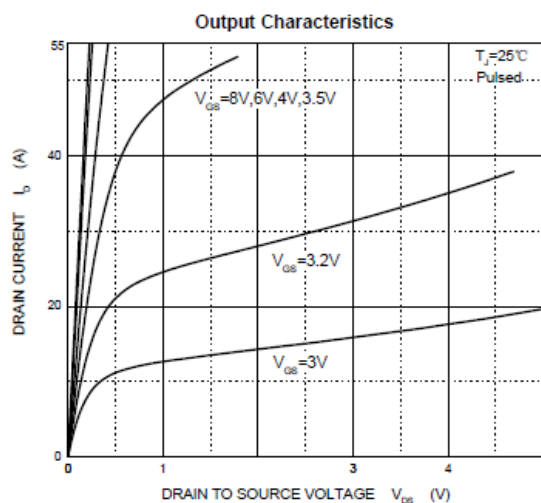
Notes : 1 Repetitive Rating:Pulse width limited by maximum junction temperature

 2 $L=0.5\text{mH}$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$

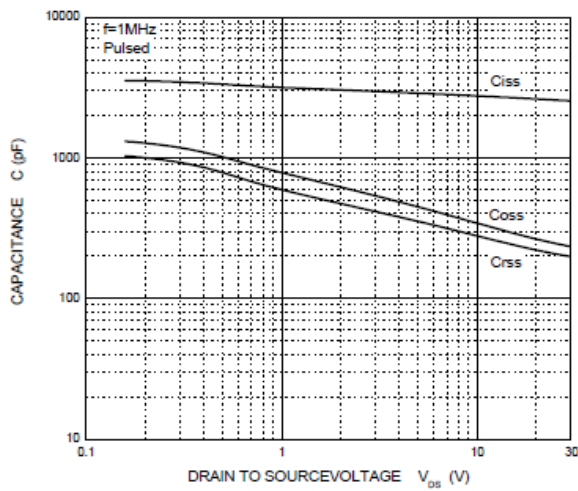
 3 Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

4 Guaranteed by design, not subject to production

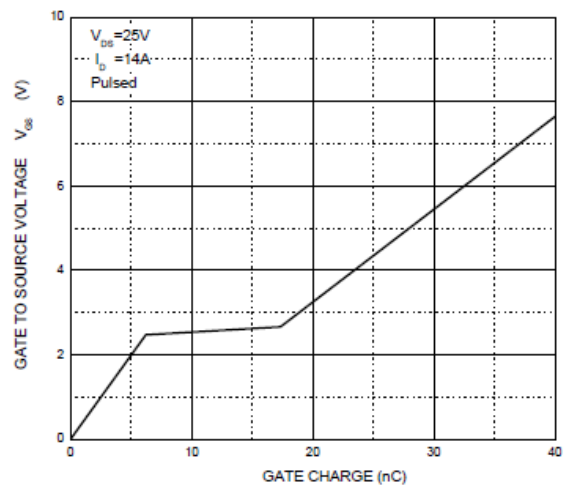
Typical Characteristics Diagrams



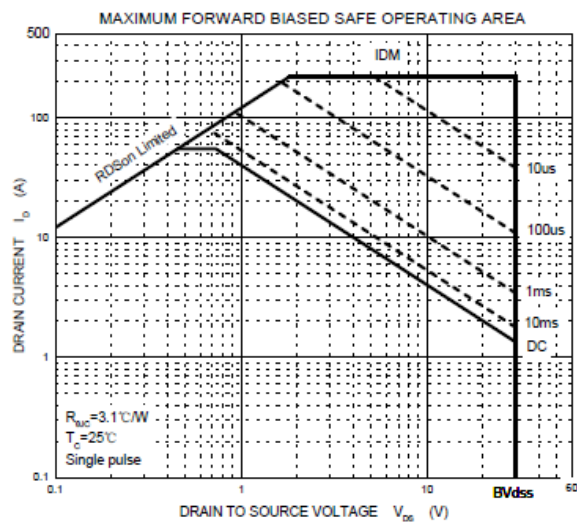
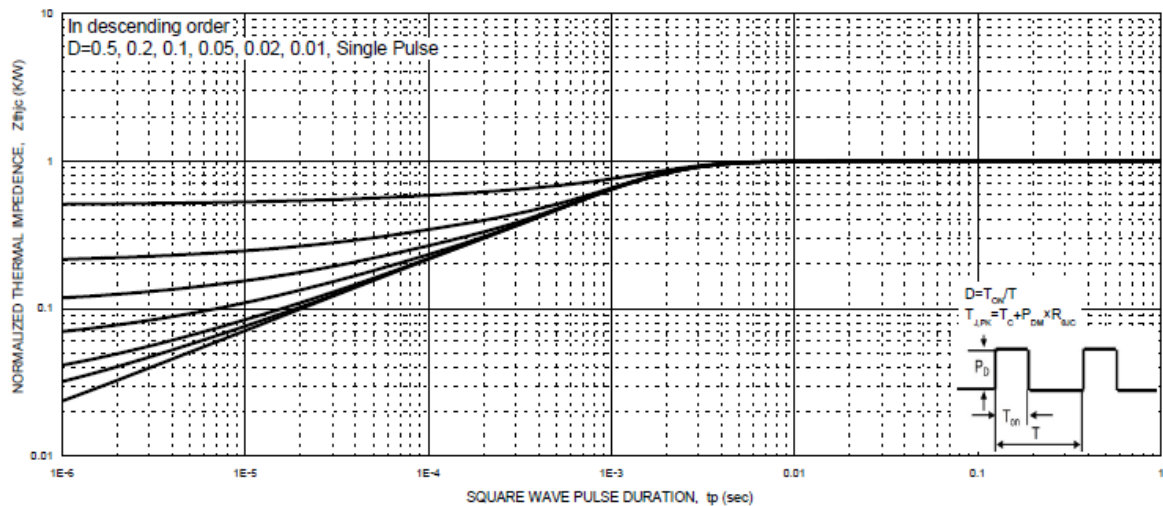
Capacitances

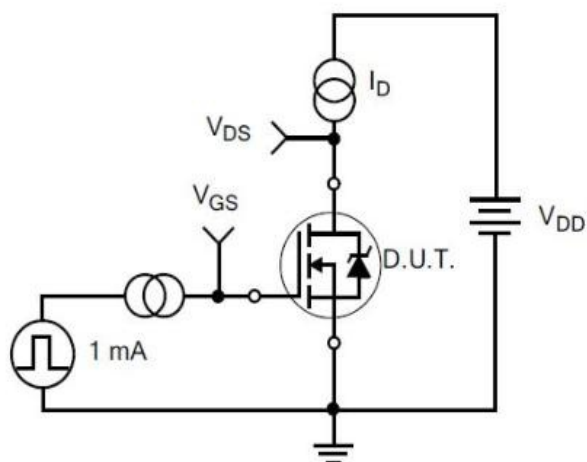


Gate Charge

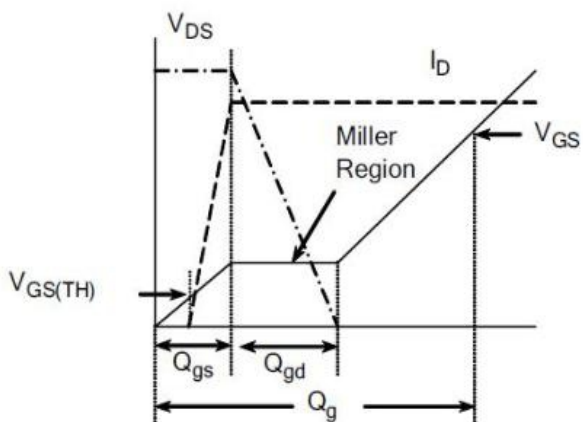


NORMALIZED TRANSIENT THERMAL IMPEDANCE

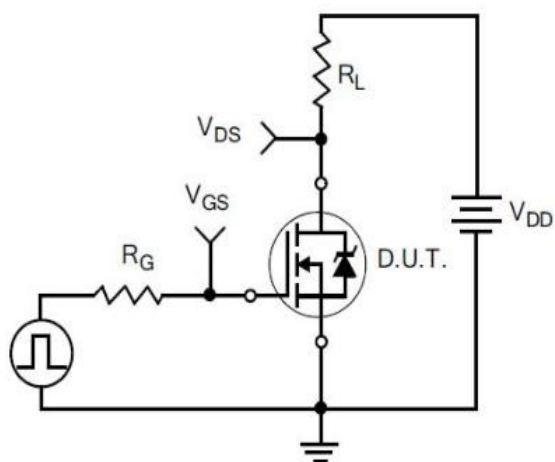




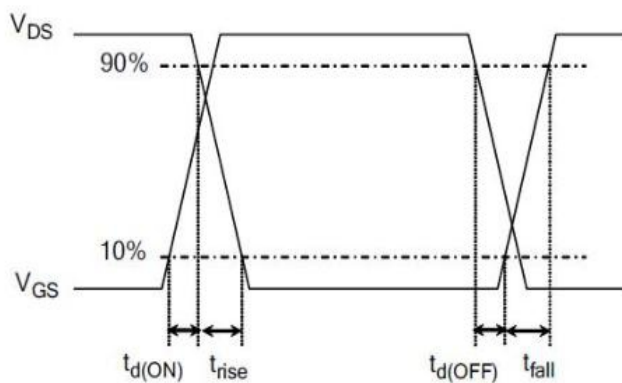
1) Gate Charge Test Circuit



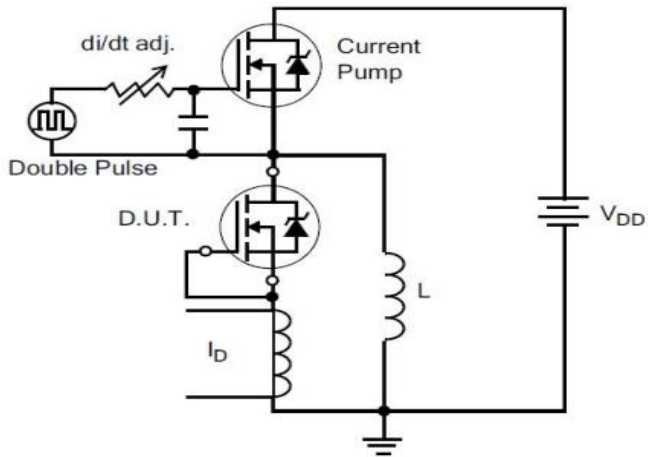
2) Gate Charge Waveform



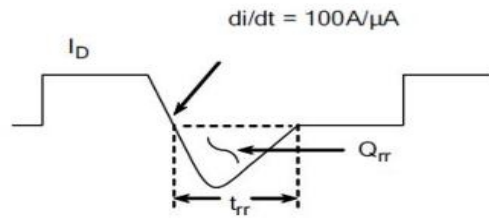
3) Resistive Switching Test Circuit



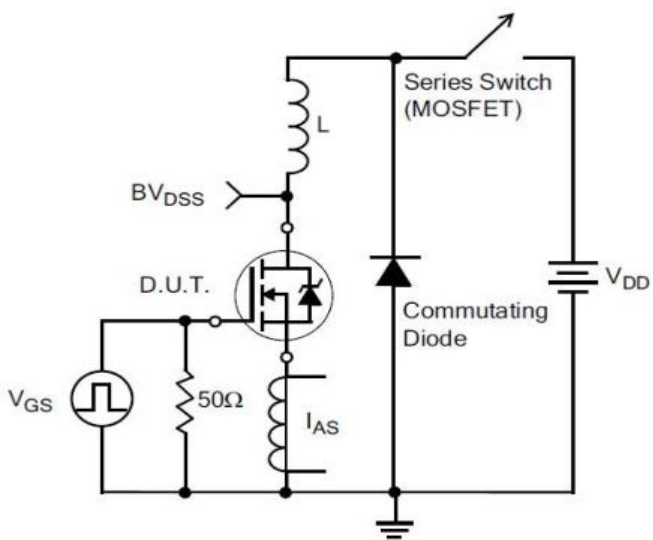
4) Resistive Switching Waveforms



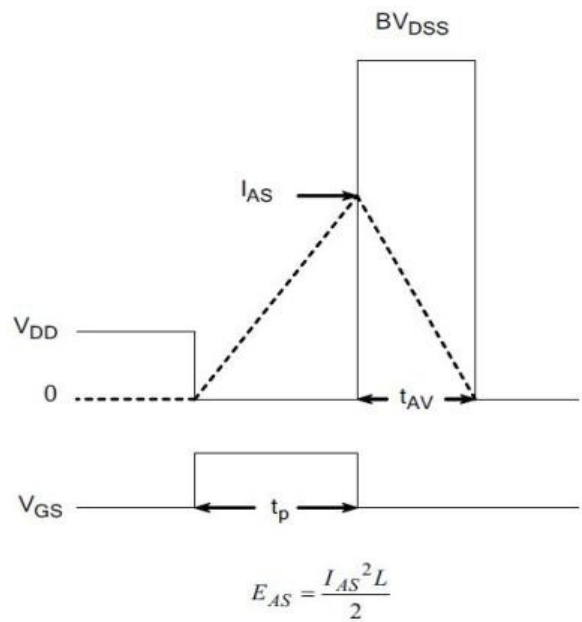
5) Diode Reverse Recovery Test Circuit



6) Diode Reverse Recovery Waveform



7) . Unclamped Inductive Switching Test Circuit



8) Unclamped Inductive Switching Waveforms

Product Names Rules

X X X X N E X X X

Process Type:
VDMOS:default
Super junction:SJ
Low Voltage trench:D

Rated Current Code
With 3 Digital,
For Example:
6.7mΩ:067,
10mΩ:010,

Channel Code
N channel:N
P channel:P

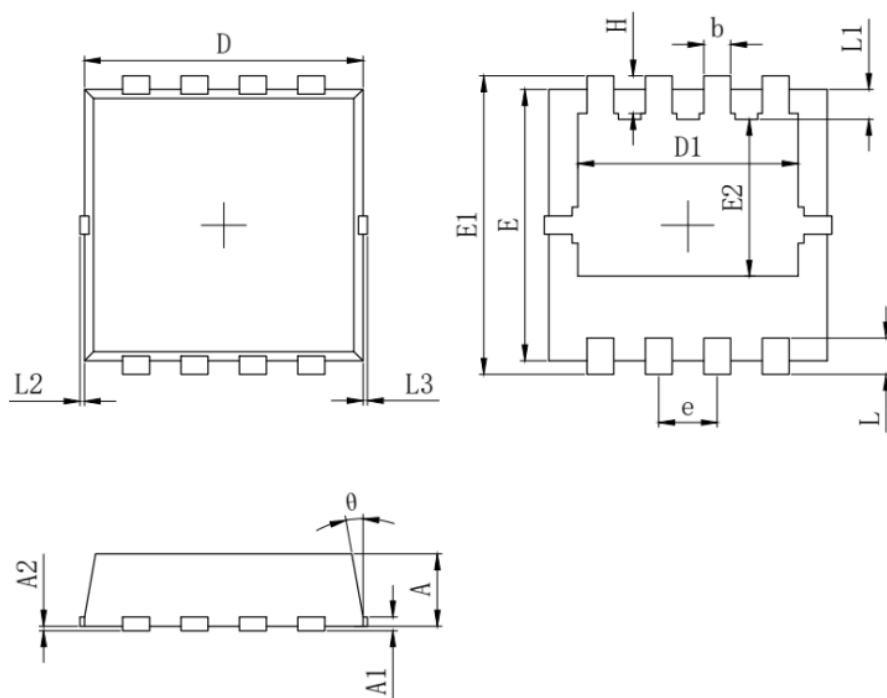
Package Code
TO-220:Default
ITO-220:F
TO-262:E
TO-263:D
TO-252:M
TO-251:N
TO-263-7L:D7
TOLL:T
DFN5×6:G
DFN3×3:Q

Rated Voltage Code
With 2 Digital,For Example:
600V:60
60V:06

Special Function Code
G-S ESD Protection:E
No Protection:Default

Dimensions

DFN3×3 PACKAGE OUTLINE DIMENSIONS



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0°~0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.535	1.735	1.935
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0°~0.100		
L3	0°~0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

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