

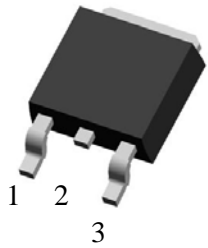
N-Channel Enhancement Mode MOSFET (100V, 20A)

PRODUCT SUMMARY		
V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
100V	20A	68@ $V_{GS} = 10V, I_D = 20A$
		72@ $V_{GS} = 4.5V, I_D = 10A$

Features

- Rugged and reliable
- Surface Mount package
- High power and current handing capability.
- Super high dense cell design for extremely low $R_{DS(ON)}$.
- Ordering information:GD20N10(Lead(Pb)-free and halogen-free)



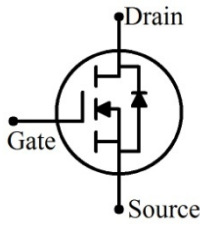


1 2
3

GD20N10 Pin Assignment & Symbol

3-Lead Plastic **TO-252**

Pin 1: Gate 2: Drain 3: Source



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

Symbol	Parameter	Ratings	Unit
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current (Continuous)	20	A
I_{DM}	Drain Current (Pulsed) ^a	80	A
P_D	Total Power Dissipation $T_A = 25^\circ\text{C}$	2.5	W
I_S	Maximum Diode Forward Current	10	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	- 55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted) ^b	3.5	$^\circ\text{C}/\text{W}$

Note: a: Pulse width limited by the maximum junction temperature
 b: 1-in²oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

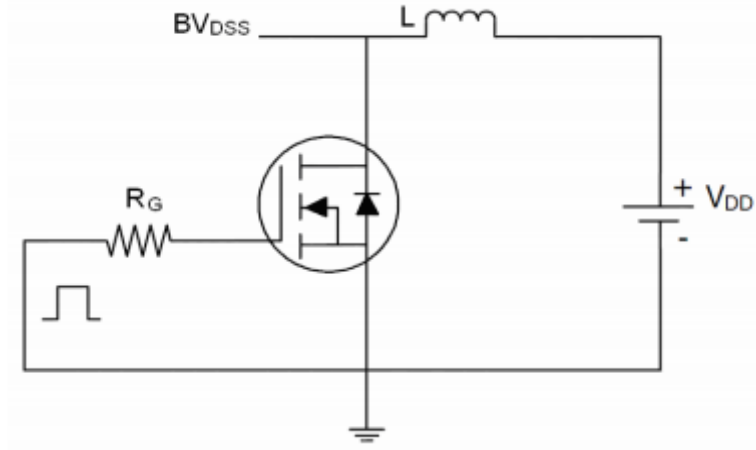
Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
B _V DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ± 20V, V _{DS} = 0V	-	-	±100	nA
• On Characteristics ^c						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	-	2.2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = 10V, I _D = 20A	-	68	80	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	72	90	
• Dynamic Characteristics ^d						
C _{iss}	Input Capacitance	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz	-	940	-	pF
C _{oss}	Output Capacitance		-	69	-	
C _{rss}	Reverse Transfer Capacitance		-	38	-	
• Switching Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} = 50V, I _D = 5.0A, V _{GS} = 5V	-	28	-	nC
Q _{gs}	Gate-Source Charge		-	3.5	-	
Q _{gd}	Gate-Drain Charge		-	7.5	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} = 30V, R _L = 6.8Ω, I _D = 4.4A, V _{GEN} = 4.5V, R _G = 1Ω	-	18	-	nS
t _r	Turn-on Rise Time		-	6	-	
t _{d(off)}	Turn-off Delay Time		-	27	-	
t _f	Turn-off Fall Time		-	8	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0V, I _S = 10A	-	-	1.2	V

Note: c: Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%

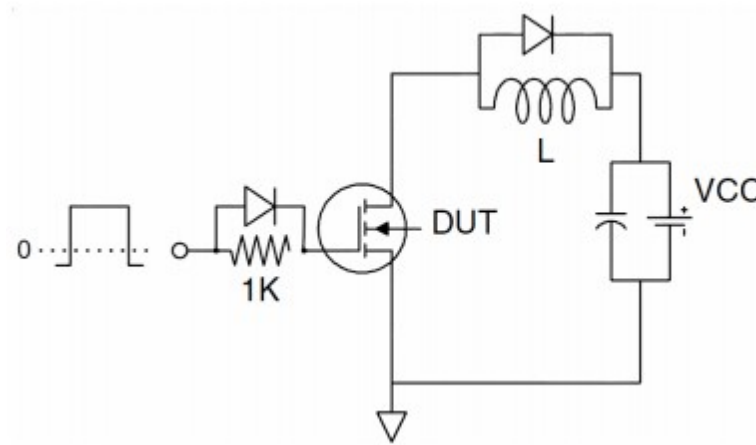
d: Guaranteed by design, not subject to production testing.

Test Circuit

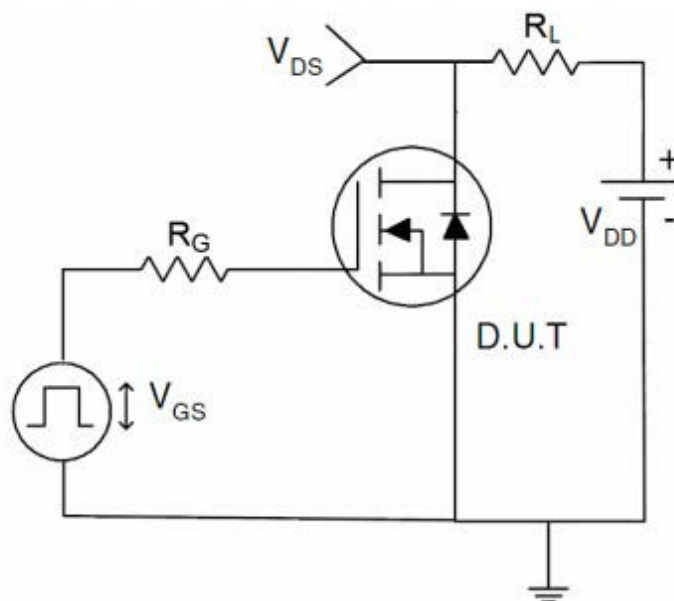
(1) E_{AS} test circuit



(2) Gate charge test Circuit



(3) Switch Time Test Circuit



Characteristics Curve

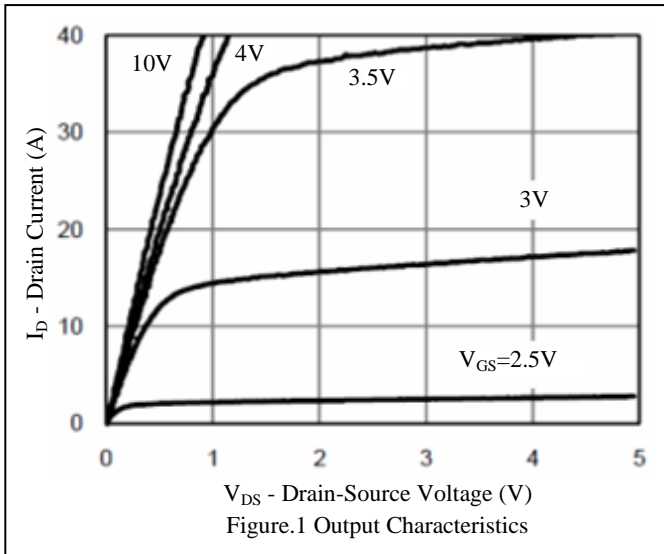


Figure.1 Output Characteristics

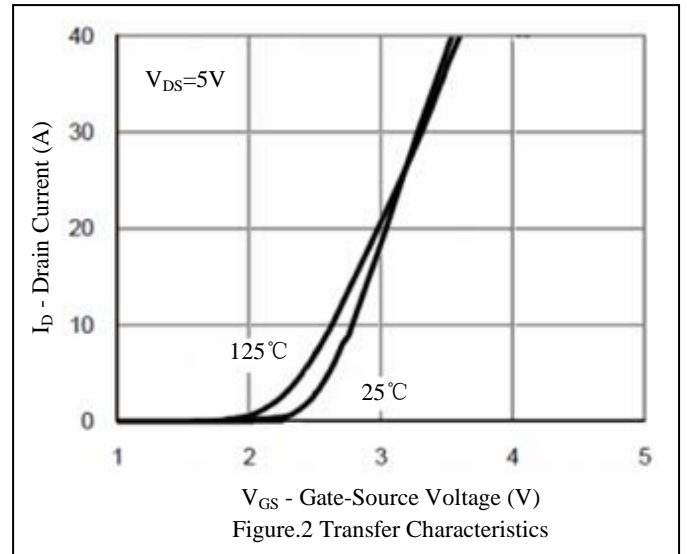


Figure.2 Transfer Characteristics

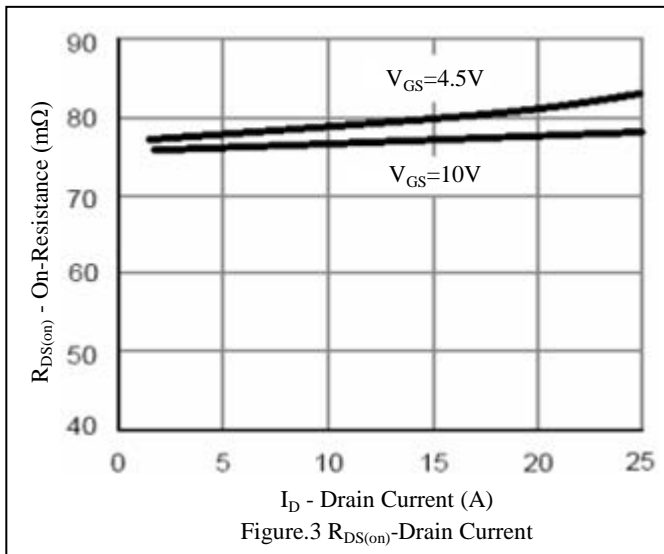


Figure.3 $R_{DS(on)}$ -Drain Current

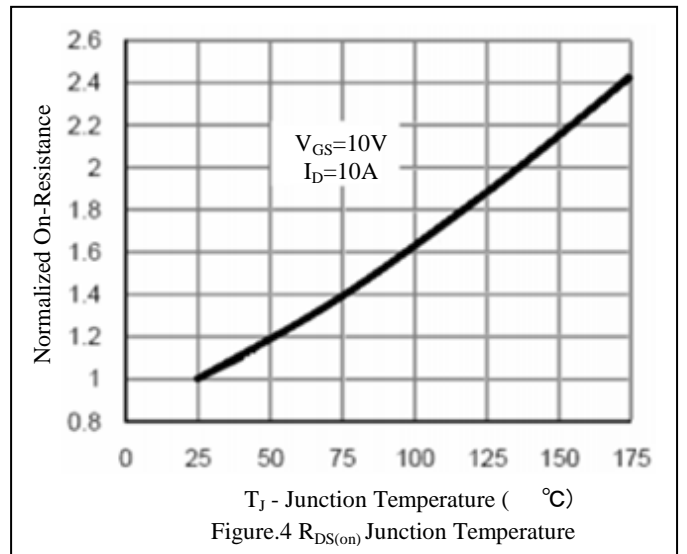


Figure.4 $R_{DS(on)}$ Junction Temperature

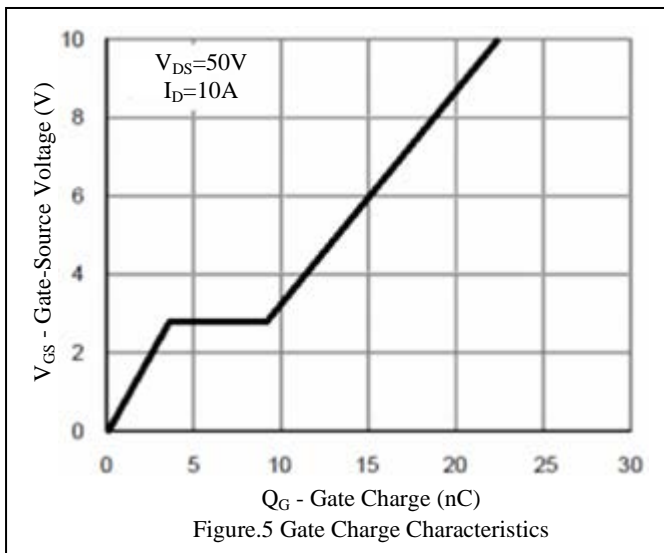


Figure.5 Gate Charge Characteristics

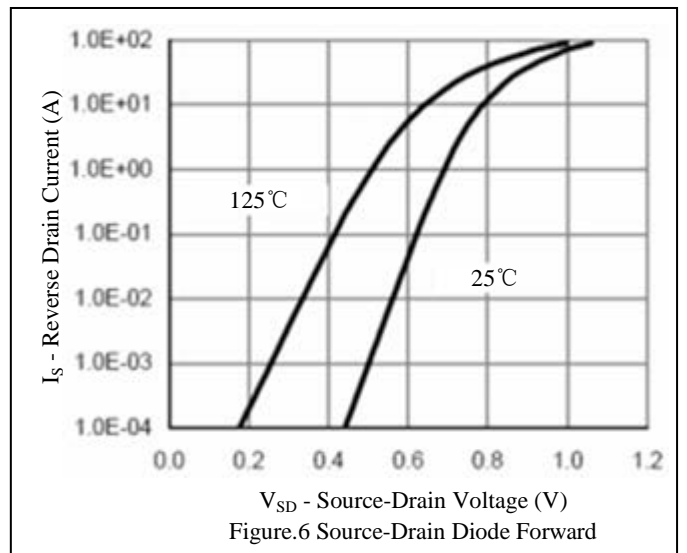
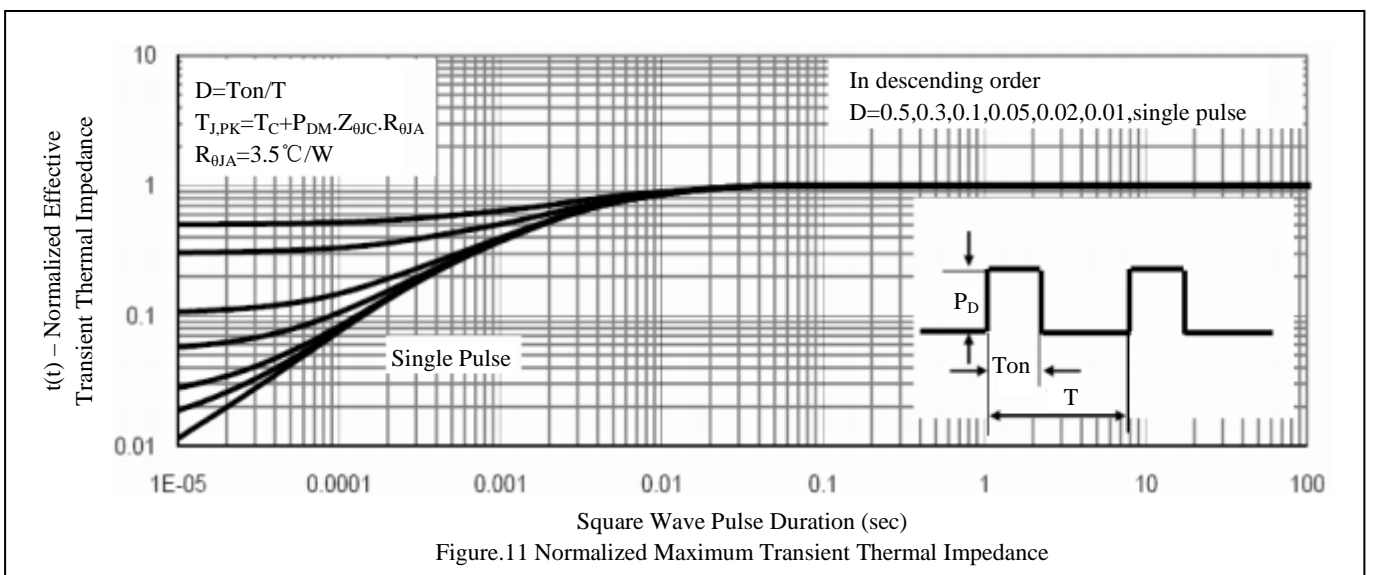
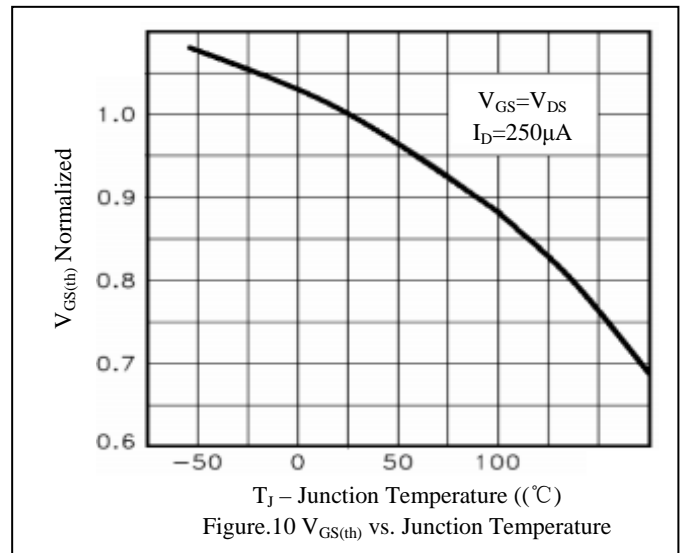
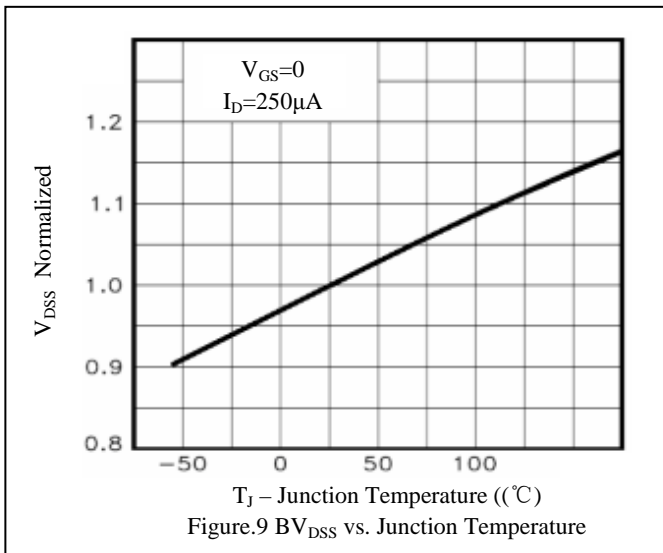
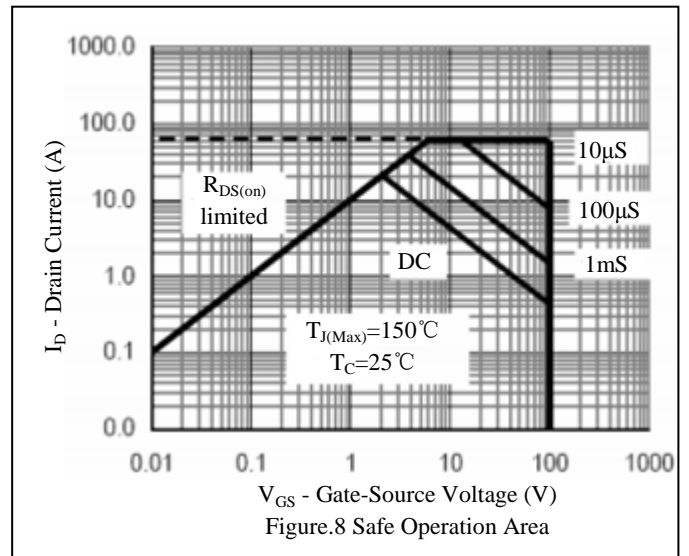
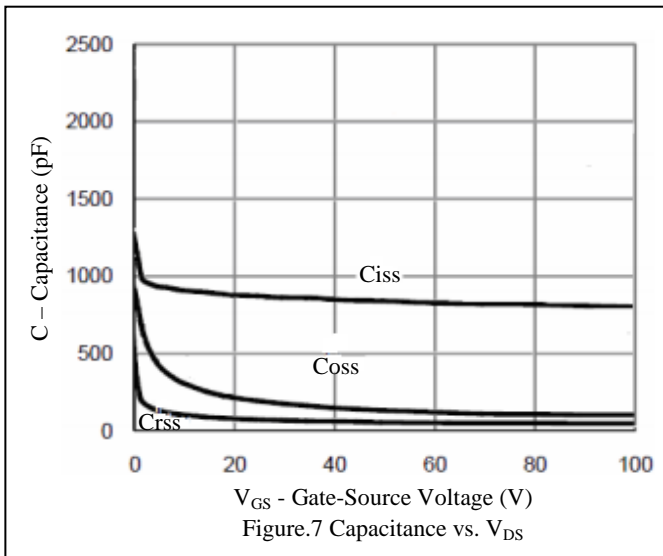
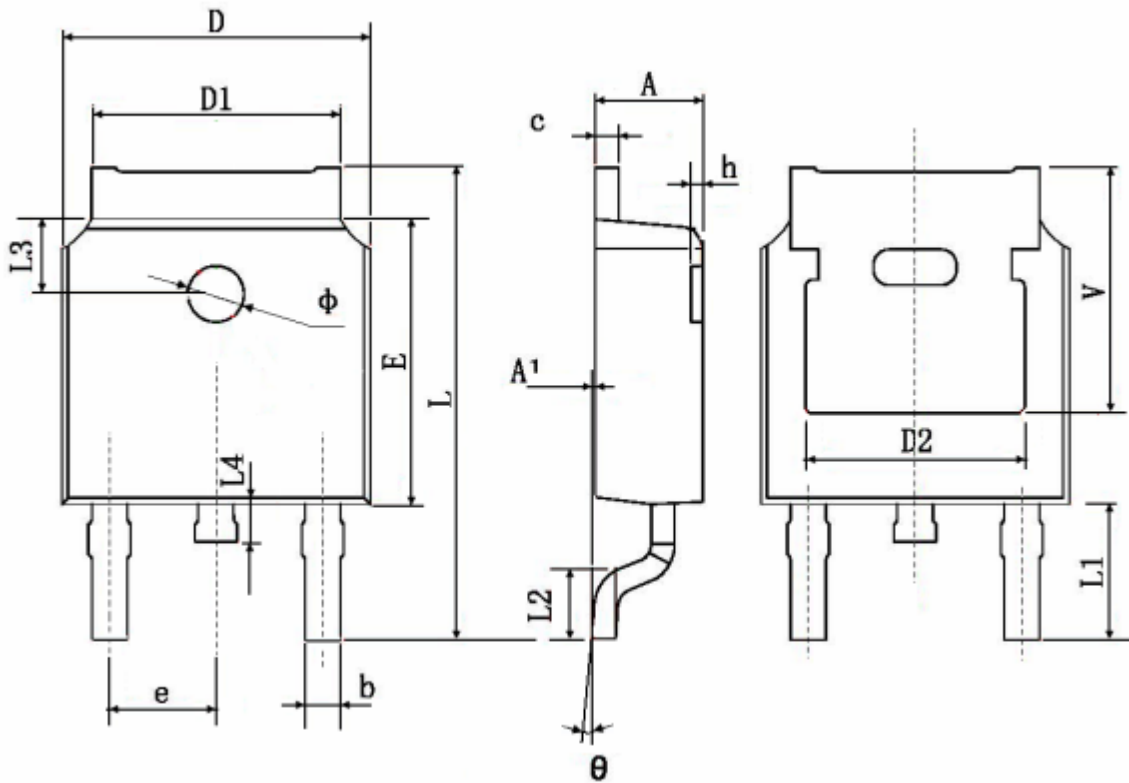


Figure.6 Source-Drain Diode Forward

Characteristics Curve



TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	.094
A1	.000	0.127	.000	0.005
b	.660		0.026	0.034
c	0.4	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.1	2.386	0.086	0.094
L	9.800	10.4	.386	0.409
L1	2.900 TYP		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP		.063 TYP.	
L4	0.600	1.000	0.024	0.039
phi	1.100	1.300	0.043	0.051
theta	0.	8-	0.	8-
h	.000	.300	0.000	0.012
V	5.350 TYP		0.211 TYP.	



Notice

1. Specification of the products displayed herein is subject to change without notice. Continuous development may necessitate changes in technical data without notice. GEMMICRO or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies.
2. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.