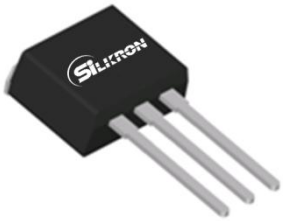
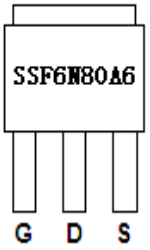
Main Product Characteristics:

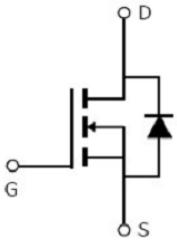
V_{DSS}	800V
R_{DS}(on)	2.2Ω (typ.)
I_D	5.5A



TO-262



Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V①	5.5	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 10V①	3.2	
I_{DM}	Pulsed Drain Current②	22	
P_D @TC = 25°C	Power Dissipation③	145	W
	Linear Derating Factor	1.16	W/°C
V_{DS}	Drain-Source Voltage	800	V
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy @ L=33.5mH	339	mJ
I_{AS}	Avalanche Current @ L=33.5mH	4.5	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

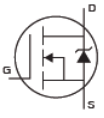
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case③	—	0.86	℃/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	62.5	℃/W
	Junction-to-Ambient (PCB mounted, steady-state) ④	—	40	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

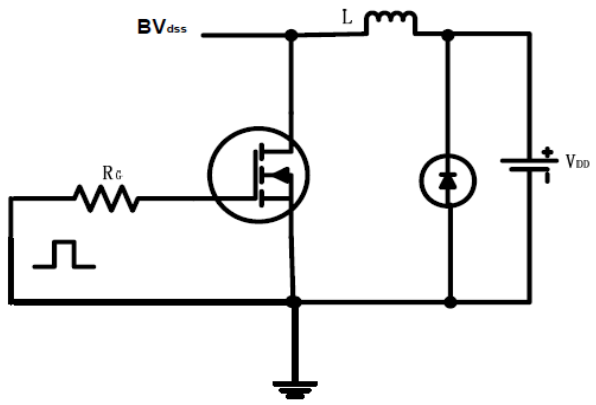
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	800	—	—	V	V_{GS} = 0V, ID = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	2.2	2.7	Ω	V_{GS}=10V,I_D = 2.5A
		—	5.2	—		T_J = 125℃
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D = 250μA
		—	1.9	—		T_J = 125℃
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 800V,V_{GS} = 0V
		—	—	50		T_J = 125℃
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =30V
		—	—	-100		V_{GS} = -30V
Q_g	Total gate charge	—	14	—	nC	I_D = 5.5A,
Q_{gs}	Gate-to-Source charge	—	4.9	—		V_{DS}=100V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	4.6	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	14	—	ns	V_{GS}=10V, VDS=415V,
t_r	Rise time	—	27	—		R_L=75Ω,
$t_{d(off)}$	Turn-Off delay time	—	37	—		R_{GEN}=25Ω
t_f	Fall time	—	25	—		ID=5.5A
C_{iss}	Input capacitance	—	700	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	76	—		V_{DS} = 25V
C_{rss}	Reverse transfer capacitance	—	3.9	—		f = 1MHz

Source-Drain Ratings and Characteristics

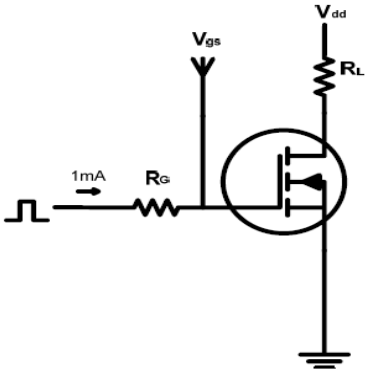
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	5.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	22	A	
V_{sd}	Diode Forward Voltage	—	0.87	1.4	V	I_S=5A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	1029	—	ns	T_J = 25°C, I_F =5.5A,
Q_{rr}	Reverse Recovery Charge	—	3835	—	nC	di/dt = 100A/μs

Test circuits and Waveforms

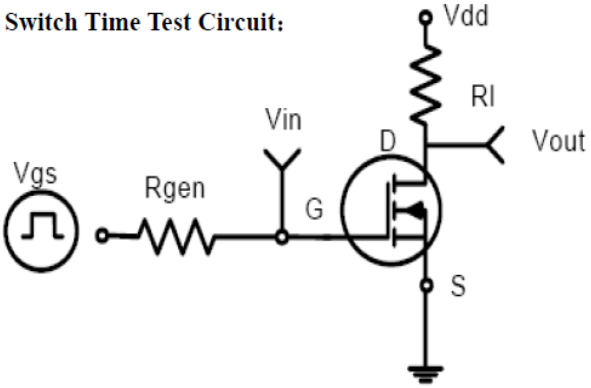
EAS test circuits:



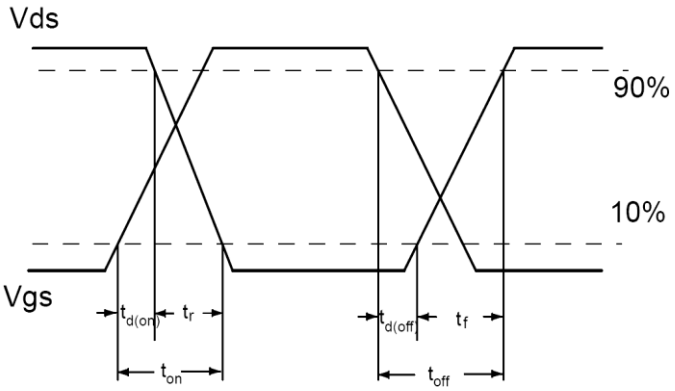
Gate charge test circuit:



Switch Time Test Circuit:



Switch Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C

Typical electrical and thermal characteristics

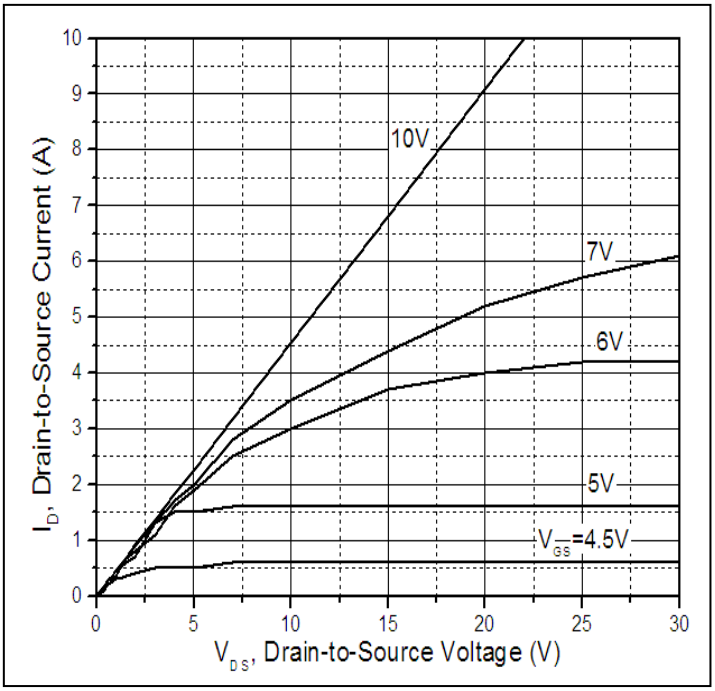


Figure 1: Typical Output Characteristics

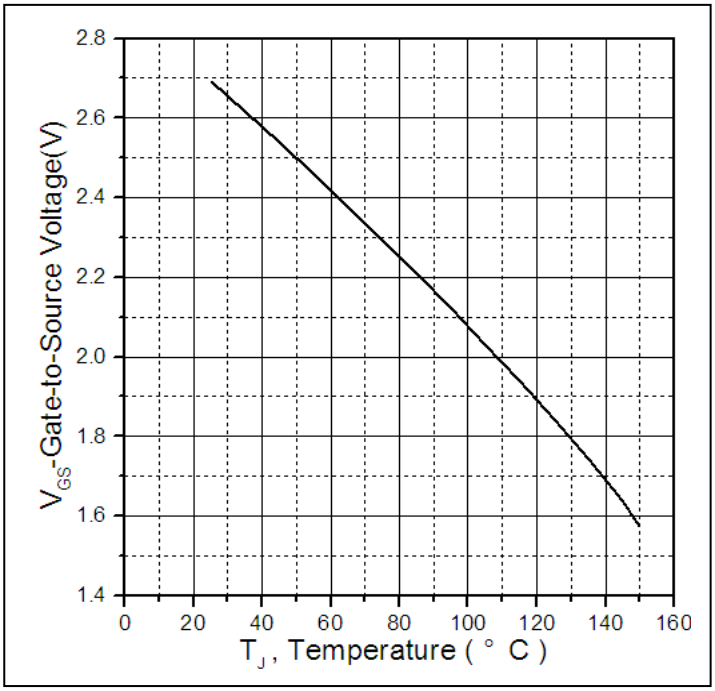


Figure 2. Gate to source cut-off voltage

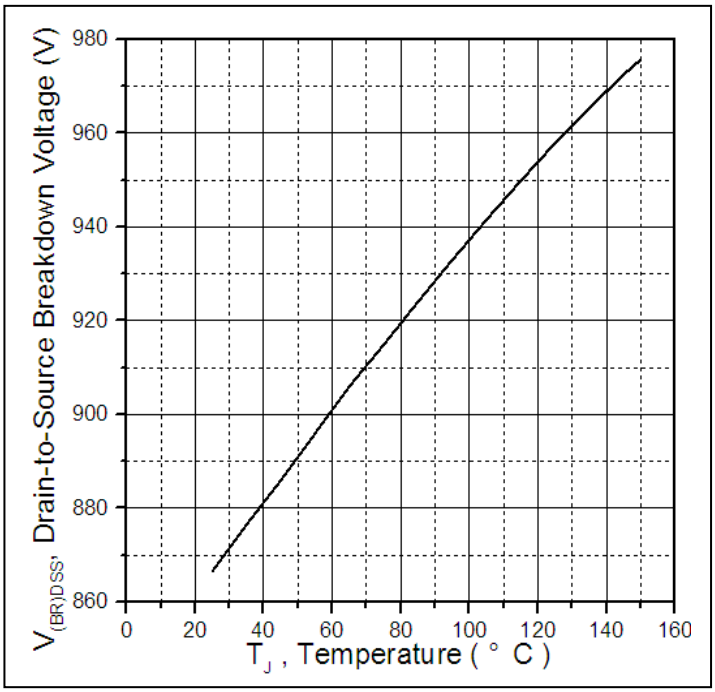


Figure 3. Drain-to-Source Breakdown Voltage Vs. Case Temperature

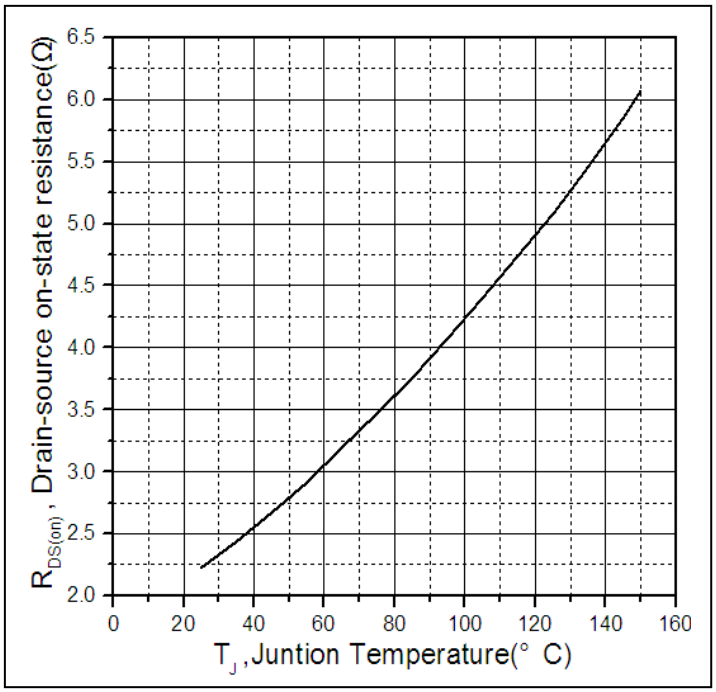


Figure 4: Normalized On-Resistance Vs. Case Temperature

Typical electrical and thermal characteristics

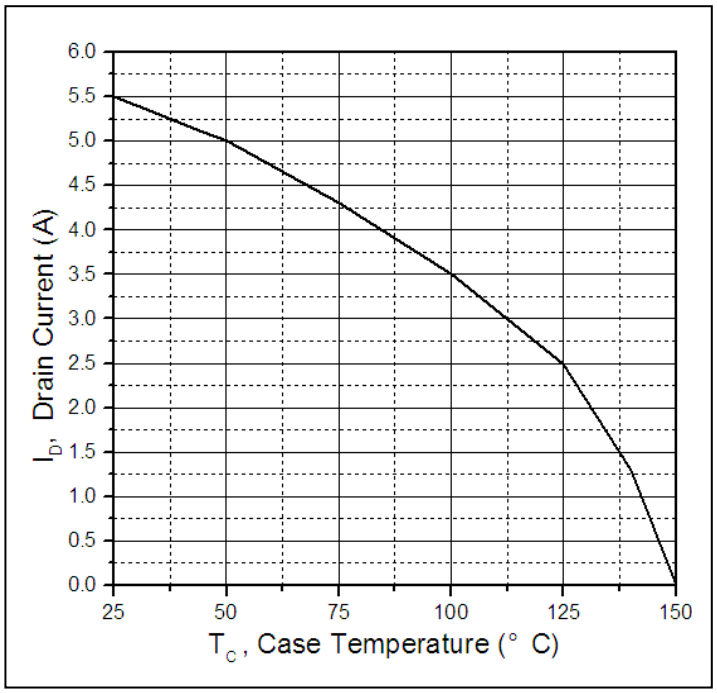


Figure 5. Maximum Drain Current Vs. Case Temperature

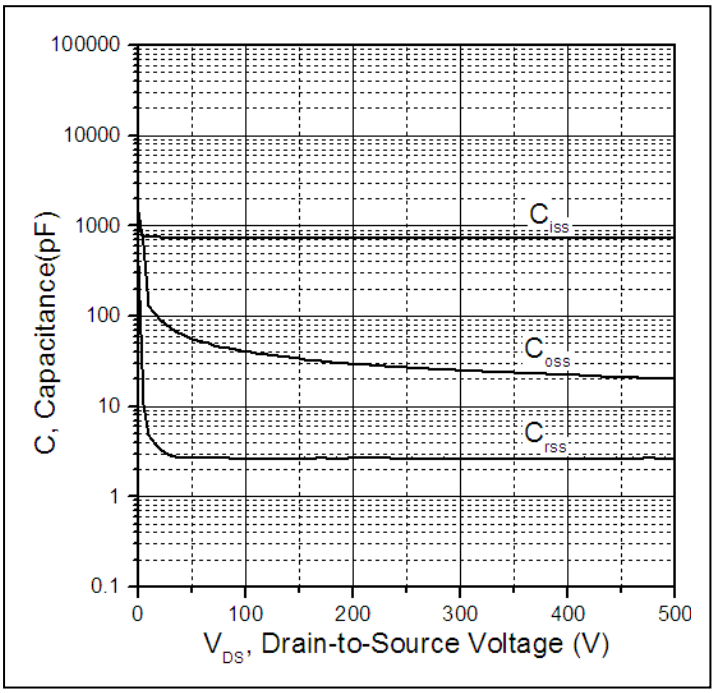


Figure 6.Typical Capacitance Vs. Drain-to-Source Voltage

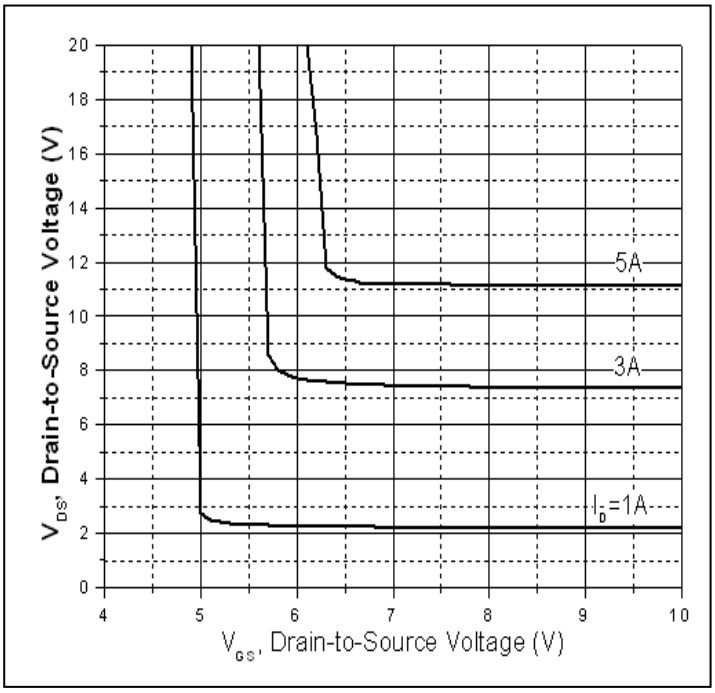
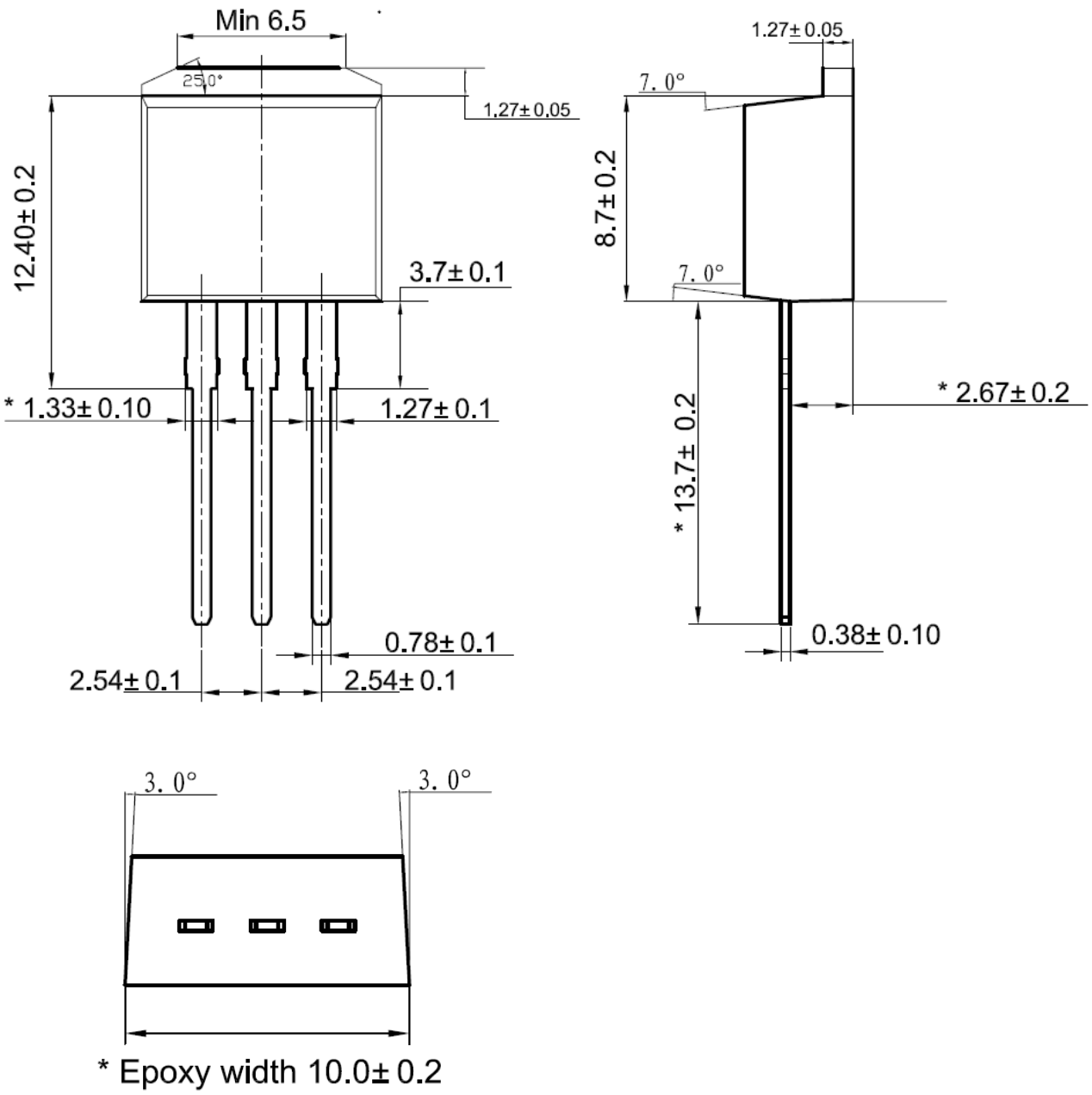


Figure7. Drain-to-Source Voltage Vs. Gate-to-Source Voltage

Mechanical Data：

TO-262 PACKAGE OUTLINE DIMENSION / Unit：mm



Ordering and Marking Information

Device Marking: SSF6N80A6

Package (Available)

TO-262

Operating Temperature Range

C : -55 to 150 ºC

Devices per Unit

Package Type	Units/ Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TO-262	50	20	1000	4	4000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	T_j=125℃ to 150℃ @ 80% of Max V_{DSS}/V_{CES}/VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T_j=150℃@ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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Customer Service

Worldwide Sales and Service:

Sales@silikron.com

Technical Support:

Technical@silikron.com

Suzhou Silikron Semiconductor Corp.

11A, 428 Xinglong Street, Suzhou Industrial Park, P.R.China

TEL: (86-512) 62560688

FAX: (86-512) 65160705

E-mail: Sales@silikron.com