Elektronische Bauelemente

SMG351AN

3A, 30V, $R_{DS(ON)}$ 60mΩ

N-Channel Enhancement Mode Power Mos.FET

RoHS Compliant Product

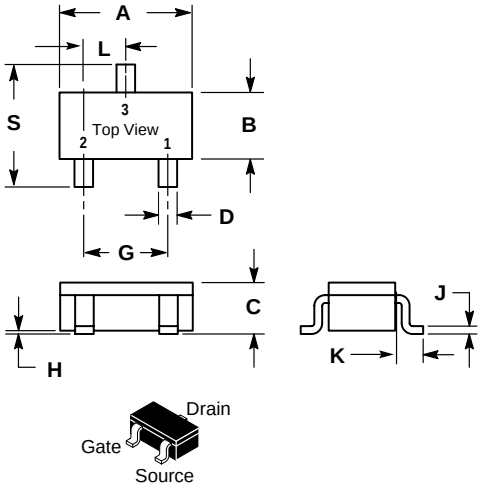
Description

The SMG351AN uses advanced trench technology to provide excellent on-resistance with low gate change.

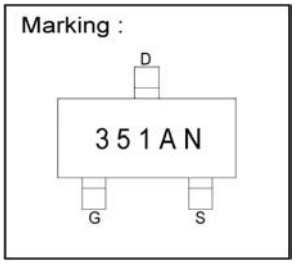
The device is suitable for use as a load switch or in PWM applications.

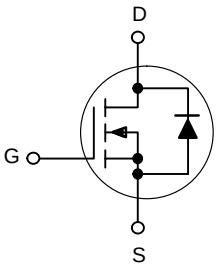
Features

* Lower Gate Charge
* Small Package Outline



SC-59		
Dim	**Min**	**Max**
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		





Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3]	I_D @T_A=25℃	3	A
Pulsed Drain Current[1,2]	I_{DM}	10	A
Total Power Dissipation	P_D @T_A=25℃	1.38	W
Linear Derating Factor		0.01	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-a	90	℃/W

Electrical Characteristics (Tj = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.1	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	2.5	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	13	-	S	V_{DS}=5V, I_D=3.0A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=30V, V_{GS}=0
Drain-Source Leakage Current(Tj=55℃)		-	-	10	uA	V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	60	mΩ	V_{GS}=10V, I_D=3.0A
		-	-	100		V_{GS}=4.5V, I_D=2.0A
Total Gate Charge[2]	Q_g	-	8.5	-	nC	I_D=3A V_{DS}=16V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	1.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	3.2	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	6	-	ns	V_{DS}=15V I_D=3A V_{GS}=10V R_G=3.3Ω R_D=3Ω
Rise Time	T_r	-	20	-		
Turn-off Delay Time	$T_{d(off)}$	-	20	-		
Fall Time	T_f	-	3	-		
Input Capacitance	C_{iss}	-	660	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	90	-		
Reverse Transfer Capacitance	C_{rss}	-	70	-		
Gate Resistance	R_g	-	0.9	-	Ω	V_{GS}=15mV, f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S=1.2A, V_{GS}=0V
Reverse Recovery Time[2]	T_{rr}	-	14	-	ns	I_S=3A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	7	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board; 270℃/W when mounted on Min. copper pad.

Characteristics Curve

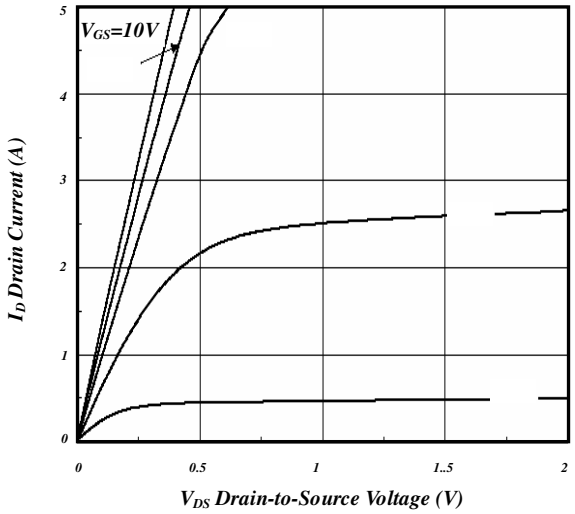


Fig 1. Typical Output Characteristics

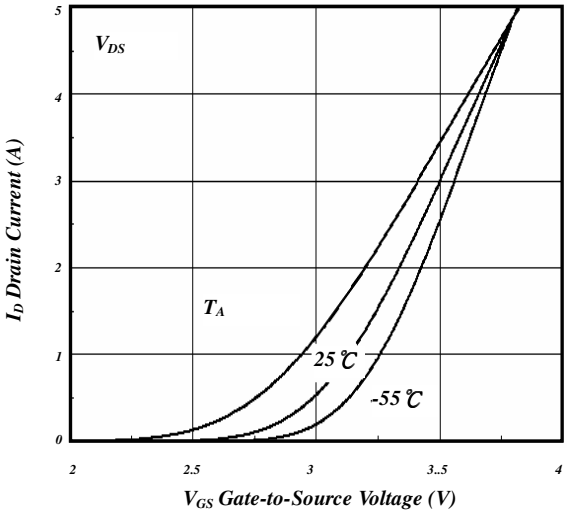


Fig 2. Typical Output Characteristics

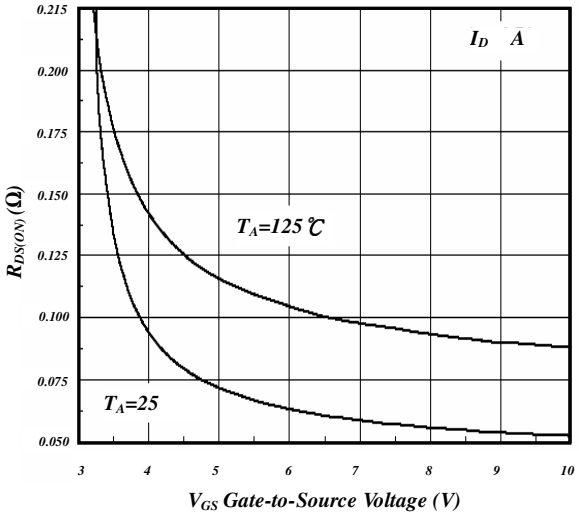


Fig 3. On-Resistance v.s. Gate Voltage

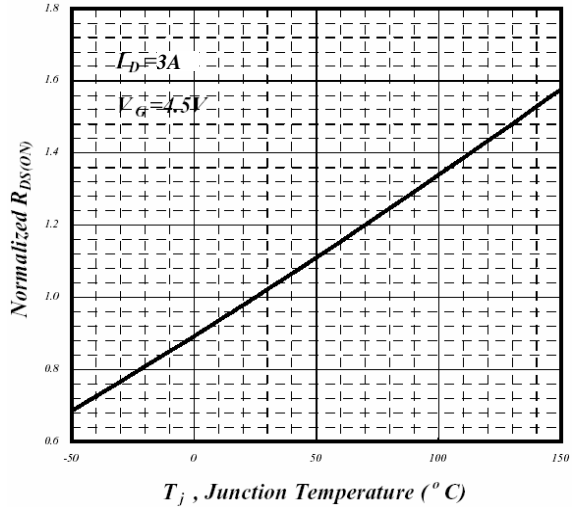


Fig 4. Normalized On-Resistance v.s. Junction Temperature

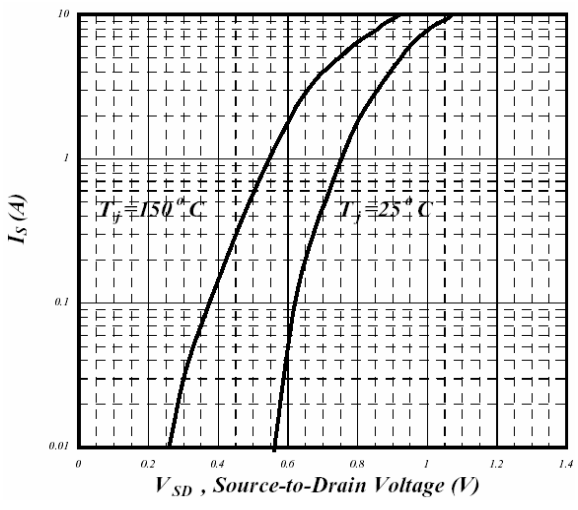


Fig 5. Forward Characteristics of Reverse Diode

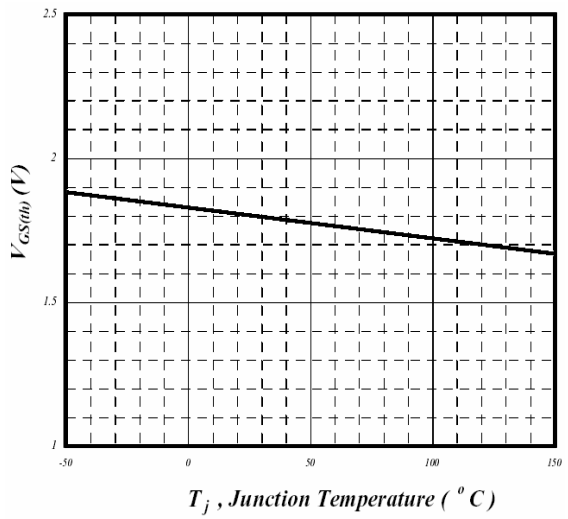


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

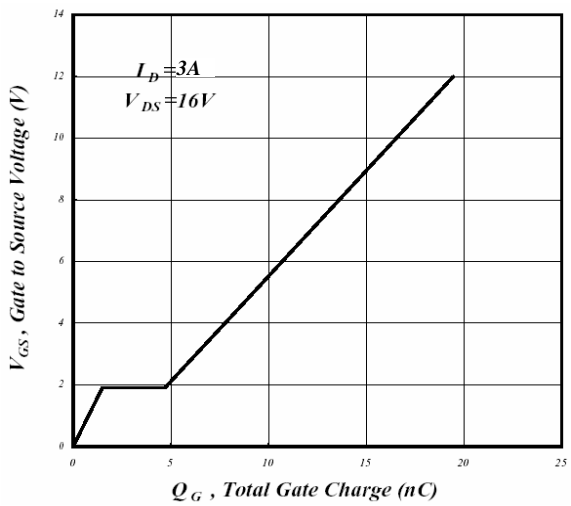


Fig 7. Gate Charge Characteristics

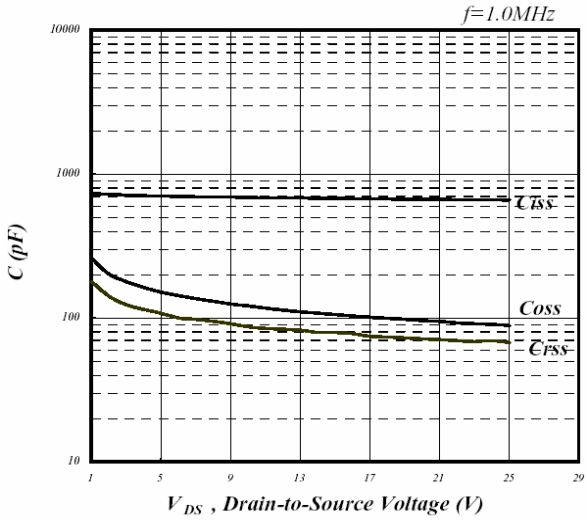


Fig 8. Typical Capacitance Characteristics

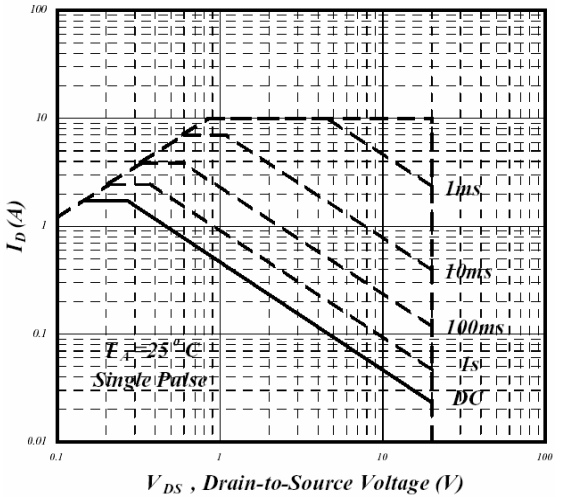


Fig 9. Maximum Safe Operating Area

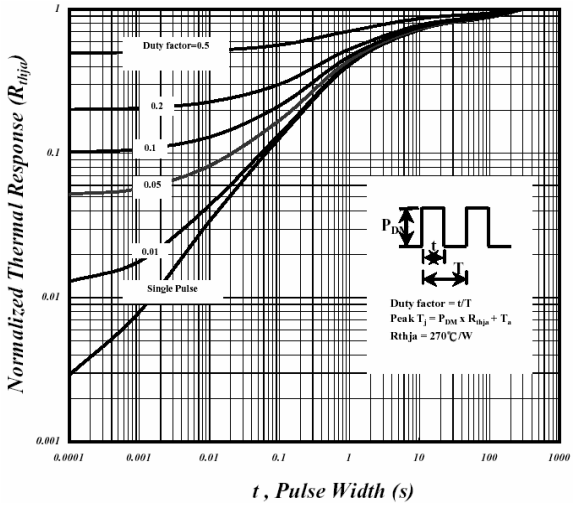


Fig 10. Effective Transient Thermal Impedance

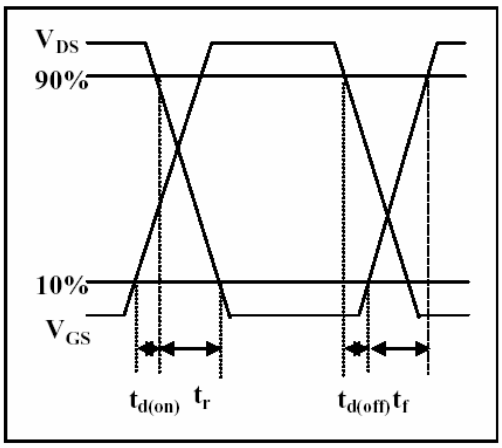


Fig 11. Switching Time Waveform

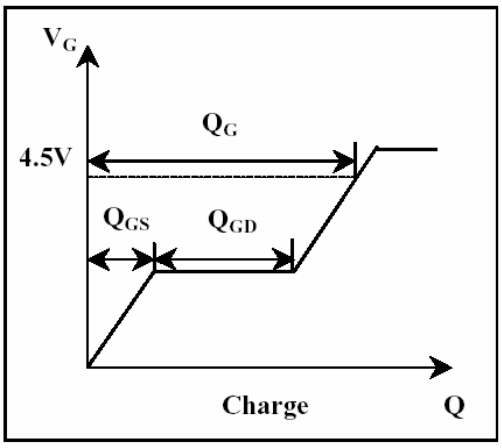


Fig 12. Gate Charge Waveform