SEMICONDUCTOR

SC26N75D7L

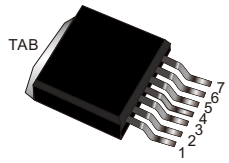
750V 100A N-Channel SIC Power MOSFET

Features

- High blocking voltage with low on-resistance
- High speed switching with low capacitance
- Easy to Parallel
- Simple to Drive

Product Summary			
V_{DS}	$R_{DS(on)}$(mΩ)Typ	I_D(A)	Qg(Typ)
750V	26 @ 18V 30A	100	128nc

TO-263-7L



Mechanical Data

- Case:TO-263-7L Package

Application

- EV Charging
- Renewable Energy
- Automotive DC/DC converters
- Server Power Supplies

Block Diagram

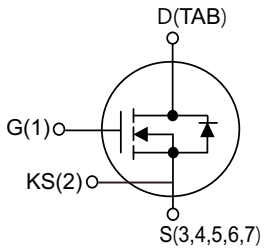


Table1 Absolute Maximum Ratings (T_C=25°C, unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	750	V
Gate-Source Voltage(Max)		$V_{GS(max)}$	-10/+22	V
Recommend Gate-Source Voltage		V_{GSop}	-5/+18	V
Continuous Drain Current	T_C=25°C	I_D	100	A
	T_C=100°C		71	
Pulsed Drain Current (Note 1)		I_{DM}	275	A
Power Dissipation	T_C=25°C	P_D	484	W
Operating Junction and Storage Temperature		T_J/T_{STG}	-55 ~ +175	°C

Table 2.Thermal Characteristics

Parameter	Symbol	SC26N75D7L	Unit
Thermal resistance Junction to Case	$R_{\theta JC}$	0.31	°C/W
Thermal resistance Junction to Ambient	$R_{\theta JA}$	40	°C/W

Table 3. Electrical Characteristics (T_J=25°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	750	-	-	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=750V,V_{GS}=0V,T_J=25°C	-	-	100	μA
			V_{DS}=750V,V_{GS}=0V,T_J=175°C	-	-	3.5	mA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	-	250	nA
	Reverse		V_{GS}=-10V,V_{DS}=0V	-	-	-250	nA
On Characteristics							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=5mA	2.0	3.0	4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=18V,I_D=30A,T_J=25°C	-	26	34	mΩ
			V_{GS}=18V,I_D=30A,T_J=175°C	-	39	-	
Gate Resisitance		R_G	f=1MHz	-	4.1	-	Ω
Dynamic Characteristics							
Input Capacitance		C_{ISS}	V_{DS}=600V,V_{GS}=0V, f=1MHz,V_{AC}=25mV	-	2112	-	pF
Output Capacitance		C_{OSS}		-	212	-	pF
Reverse Transfer Capacitance		C_{RSS}		-	5	-	pF
Coss stored energy		E_{OSS}	V_{DS}=400V,f=1MHz	-	12	-	μJ
Turn-on switching energy		E_{ON}	V_{DS}=400V,I_D=30A,V_{GS}=-5/18V, R_G=2.5Ω,Load=100μH,T_J=175°C	-	59	-	μJ
Turn-off switching energy		E_{OFF}		-	14	-	μJ
Turn-On Delay Time		td(on)	V_{DS}=400V,I_D=30A V_{GS}=-5/18V,R_G=2.5Ω, Load=100μH	-	10	-	ns
Turn-On Rise Time		t_R		-	11	-	ns
Turn-Off Delay Time		td(off)		-	19	-	ns
Turn-Off Fall Time		tf		-	7	-	ns
Total Gate Charge		Q_G	V_{DD}=400V,I_D=30A, V_{GS}=-5/18V	-	128	-	nC
Gate-Source Charge		Q_{GS}		-	32	-	nC
Gate-Drain Charge		Q_{GD}		-	24	-	nC
Drain-Source Diode Characteristics and Maximum Ratings(Note 2)							
Drain-Source Diode Forward Voltage		V_{SD}	V_{GS}=0V,I_S=15A	-	3.5	-	V
Continuous Diode Forward Current		I_S	V_{GS}=0V	-	55	-	A
Reverse Recovery Time		trr	V_R=400V,di/dt=2400A/μs; I_{SD}=15A,V_{GS}=-5V,T_J=175°C	-	18	-	ns
Recovered charge		Qrr		-	160	-	nC
Peak reverse recovery current		Irrm		-	8.5	-	A

Notes: 1 RepetitiveRating Pulse width limited by maximum junction temperature

2 Pulse Test: Pulse width ≤300μS,Duty cycle≤2%

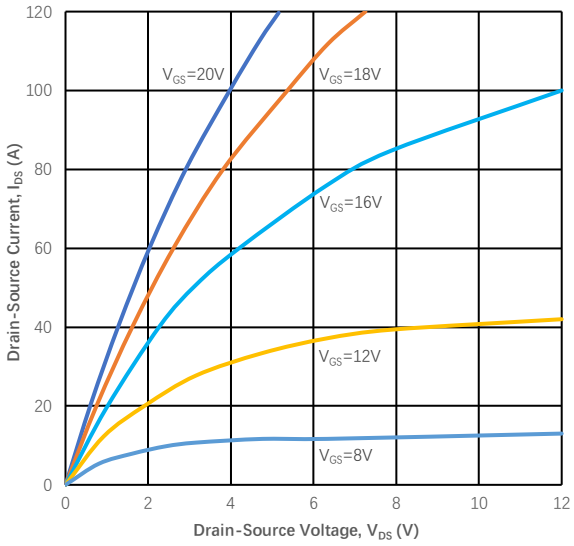


Figure 1

Output Characteristics (T_J=25 °C)

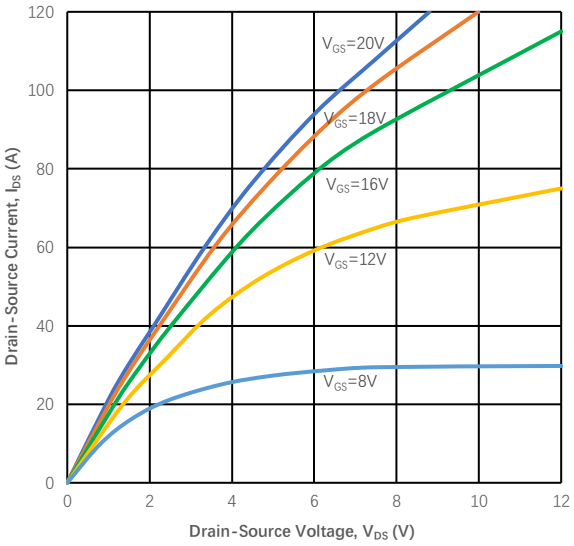


Figure 2

Output Characteristics (T_J=175°C)

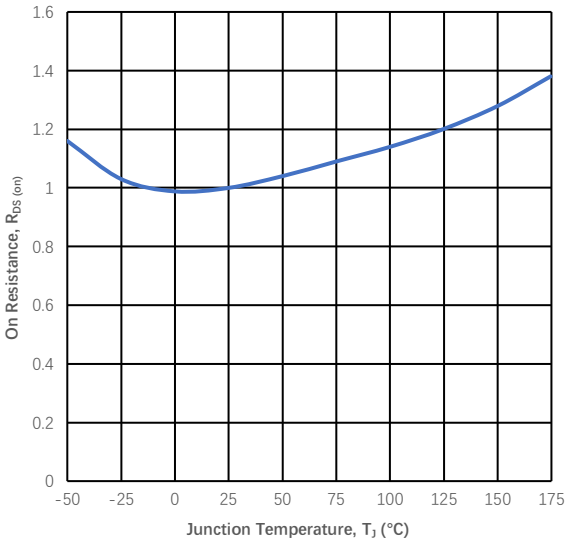


Figure 3

Normalized On-Resistance vs. Temperature

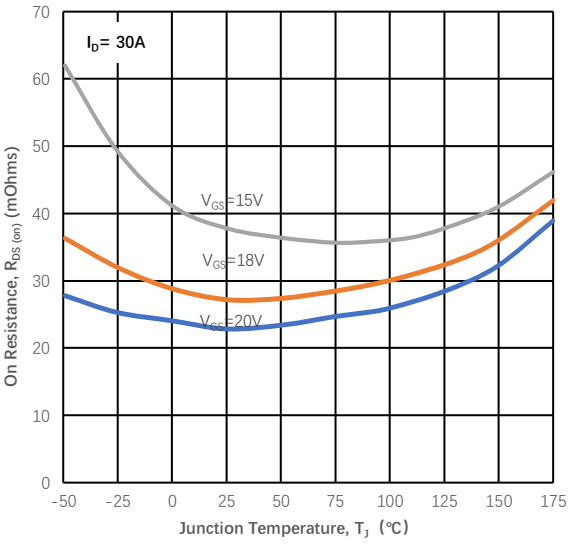


Figure 4

On-Resistance vs. Temperature

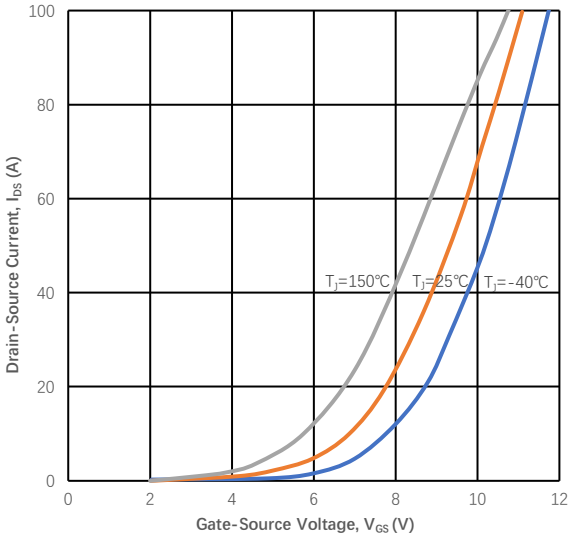


Figure 5

Transfer Characteristic

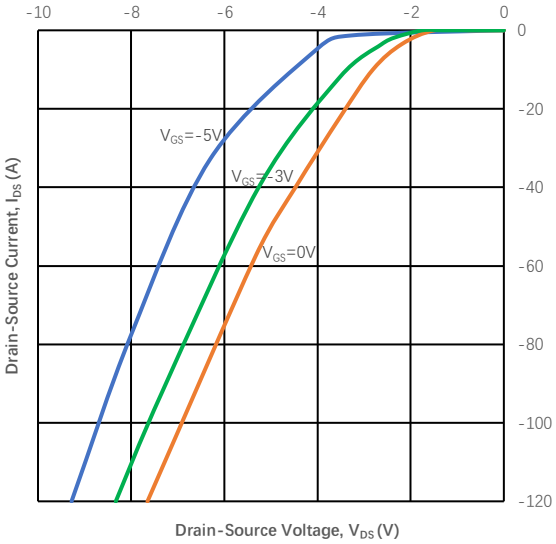


Figure 6

Body Diode Characteristic at 25°C

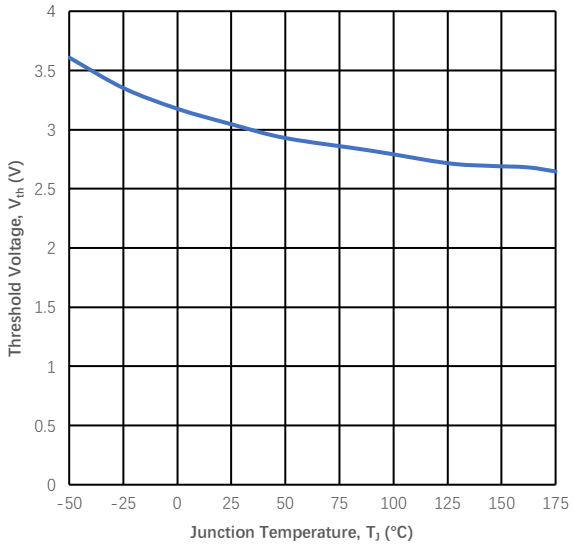


Figure 7

Threshold Voltage vs. Temperature

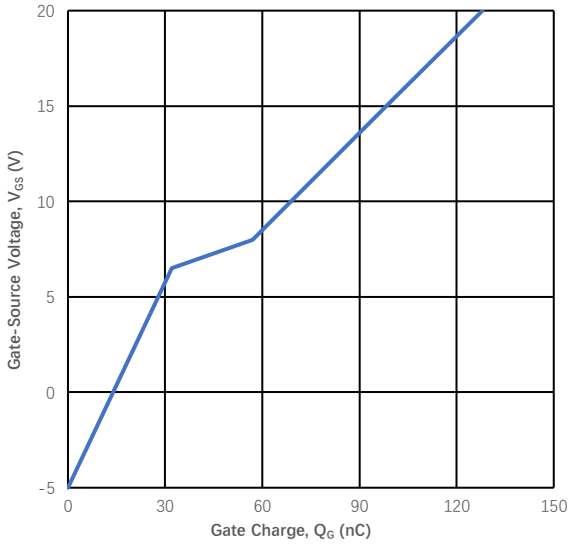


Figure 8

Gate Charge Characteristics

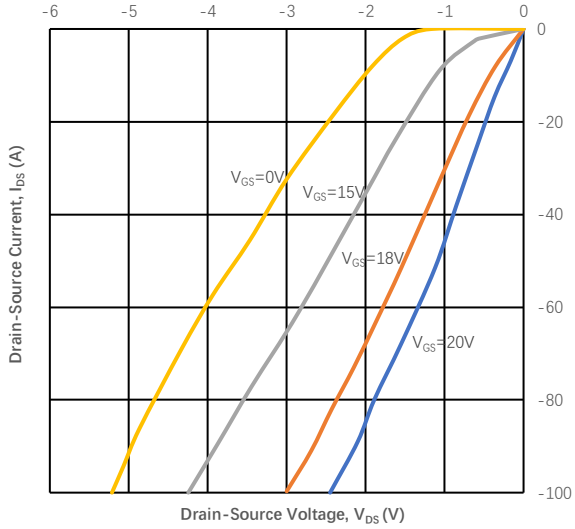


Figure 9

3rd Quadrant Characteristic at 25°C

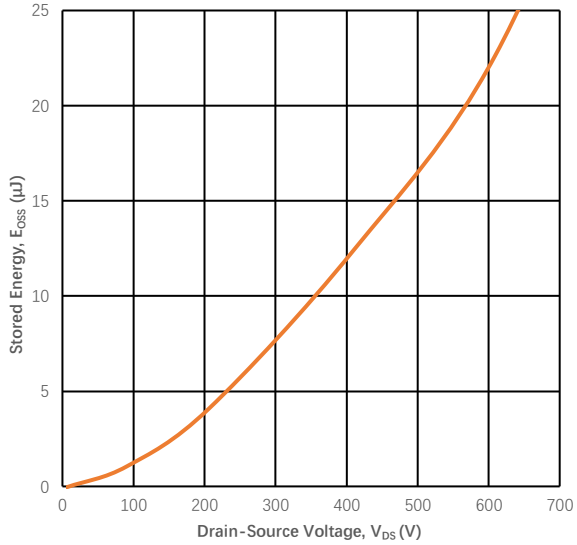


Figure 10

Output Capacitor Stored Energy

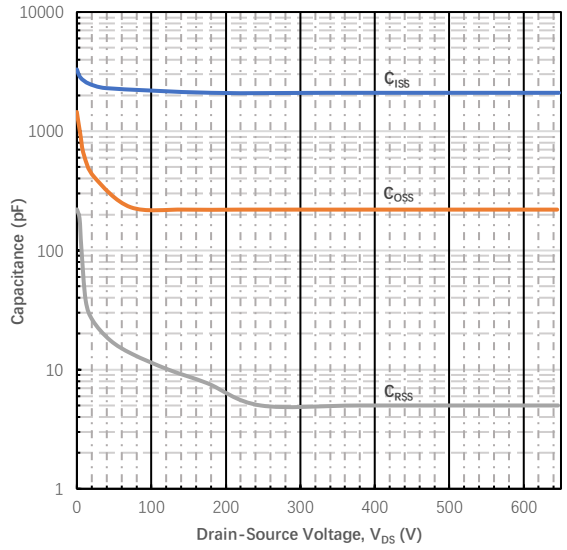


Figure 11

Capacitances vs. Drain-Source

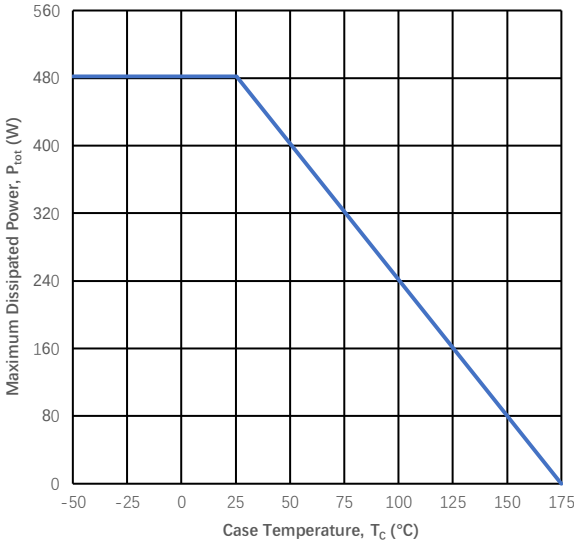


Figure 12

Max Power Dissipation Derating vs T_C

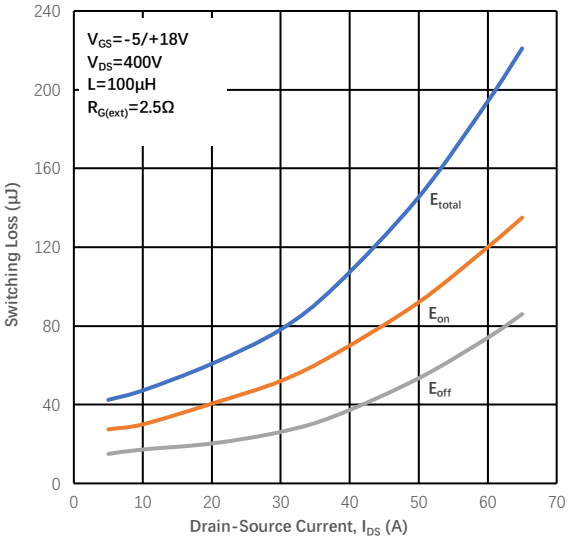


Figure 13

Switching Energy vs. Drain Current

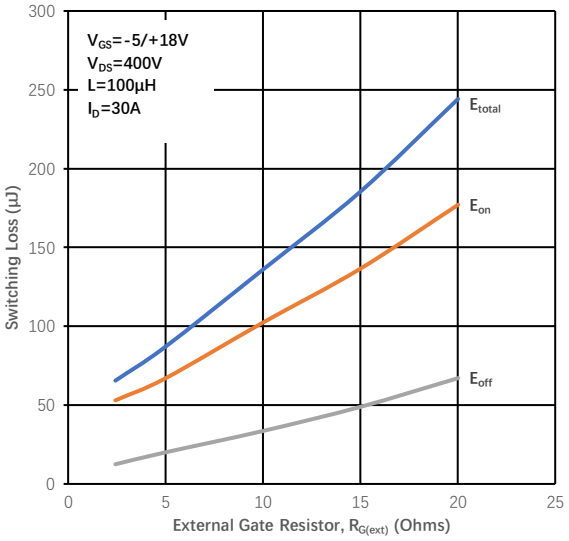


Figure 14

Switching Energy vs. $R_{G(ext)}$

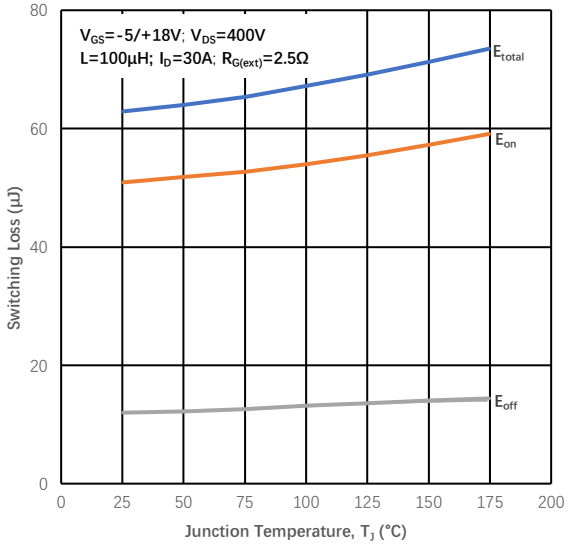


Figure 15

Switching Energy vs. Temperature

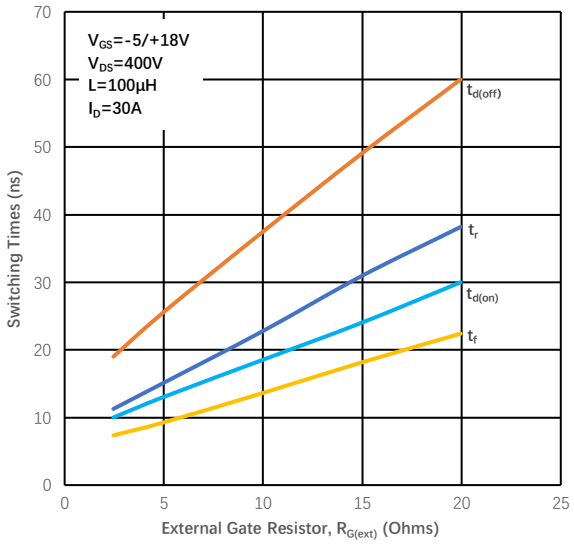


Figure 16

Switching Times vs. $R_{G(ext)}$

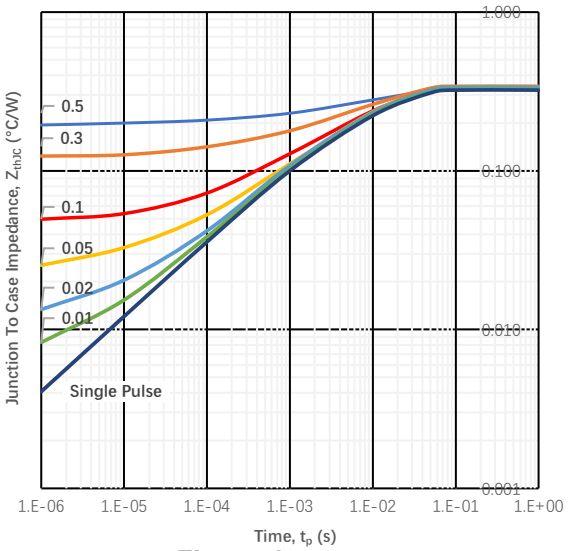


Figure 17

Transient Thermal Impedance

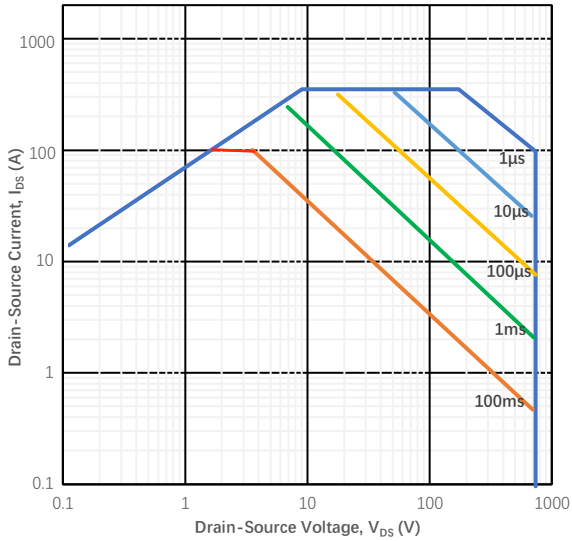
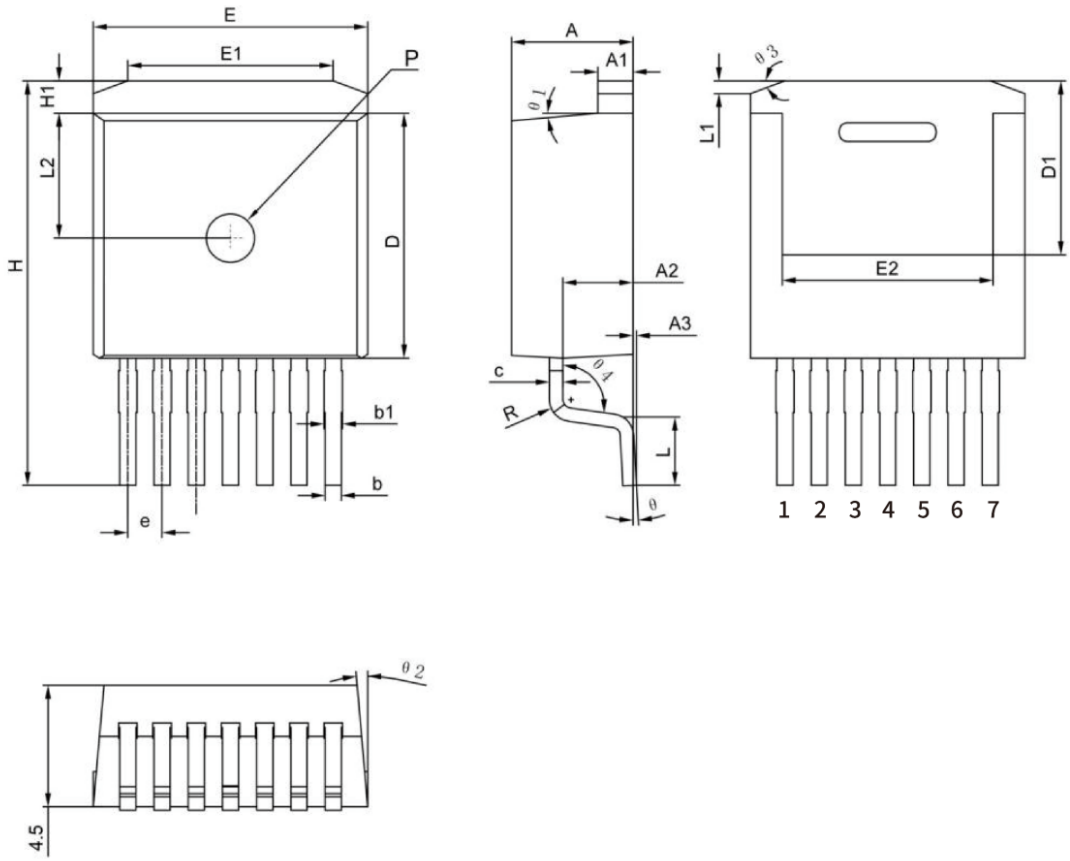


Figure 18

Safe Operating Area

Dimensions

TO-263-7L package



Symbol	Millimeters			Symbol	Millimeters		
	Min.	Type.	Max.		Min.	Type.	Max.
A	4.40	4.50	4.60	**e**	1.17	1.27	1.37
A1	1.25	1.30	1.40	**H**	14.75	15.00	15.25
A2	2.45	2.60	2.70	**H1**	1.10	1.20	1.30
A3	0.05	0.13	0.20	**L**	2.35	2.55	2.75
b	0.50	0.60	0.70	**L1**	0.37	0.57	0.77
b1	0.60	0.70	0.85	**L2**	4.48	4.63	4.78
C	0.45	0.50	0.60	**θ**	0°	3°	5°
D	8.88	9.08	9.28	**θ1**	3°	5°	7°
D1	6.25	6.45	6.65	**θ2**	3°	5°	7°
E	9.88	10.18	10.28	**θ3**	15°	20°	25°
E1	6.67	7.07	7.47	**R**	0.75	0.80	0.85
E2	7.67	7.82	7.97	**P**	1.70	1.80	1.90

Pin	Symbol	Description
1	G	Gate Drain
2	S	Driver Source
3-7	S	Power Source
mb	D	Mounting Base; Connected to Drain

Note:

1. All metal surfaces are Sn plated (matte), except area of cut.
2. Burr or mold flash size (0.5 mm) is not included in the dimensions.

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