

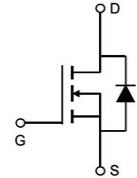
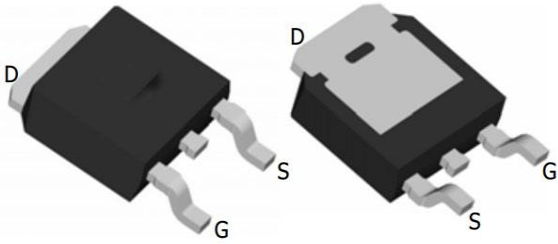
30V /85A Single N Power MOSFET
General Description

30V /85A Single N Power MOSFET

 Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=4.5\text{ V}$

Pb-free lead plating; RoHS compliant

V_{DS}	30	V
$R_{DS(on),TYP@V_{GS}=10V}$	2.8	m Ω
$R_{DS(on),TYP@V_{GS}=4.5}$	4.2	m Ω
I_D	85	A



Part ID	Package Type	Marking	Tape and reel information
SM4132T9RL	TO-252	85N03	2500


 100% UIS Tested
 100% Kg Tested

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	20	$\pm V$
Continuous Drain Current ^A	I_D	$T_A=25^\circ C$	A
		$T_A=70^\circ C$	
Pulsed Drain Current ^B	I_{DM}	136.0	
Avalanche Current ^C	I_{AR}	27.2	
Repetitive avalanche energy $L=0.1mH$ ^C	E_{AR}	62.6	mJ
Power Dissipation ^A	P_D	$T_A=25^\circ C$	W
		$T_A=70^\circ C$	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	15	22	$^\circ C/W$
Maximum Junction-to-Ambient ^A		Steady State	30	36
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	9	14	$^\circ C/W$



STATIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = -250uA, V _{GS} = 0V	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V			1 5	uA
I _{GSS}	Gate-Body leakage current	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} I _D = 250µA	1.5	2.3	3	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =20A		2.8	4.0	mΩ
		V _{GS} =4.5V, I _D =20A		4.2	6.0	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =20A		96		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =211V		0.72	1	V
I _S	Maximum Body-Diode Continuous Current				85	A

DYNAMIC PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		3700	4514	pF
C _{oss}	Output Capacitance			700	861	pF
C _{rss}	Reverse Transfer Capacitance			390	464	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz			8.8	Ω

SWITCHING PARAMETERS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =20A		33		nC
Q _g 4.5V)	Total Gate Charge			16.5		
Q _{gs}	Gate Source Charge			12.32		
Q _{gd}	Gate Drain Charge			17.6		
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =0.75Ω, R _{GEN} =3Ω		17		ns
t _r	Turn-On Rise Time			13.6		
t _{D(off)}	Turn-Off DelayTime			47.6		
t _f	Turn-Off Fall Time			15.3		
t _{rr}	Body Diode Reverse Recovery Time	I _F =-8A, dI/dt=500A/µs		34		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =18A, dI/dt=500A/µs		30		nC

DC ELECTRICAL AND THERMAL CHARACTERISTICS

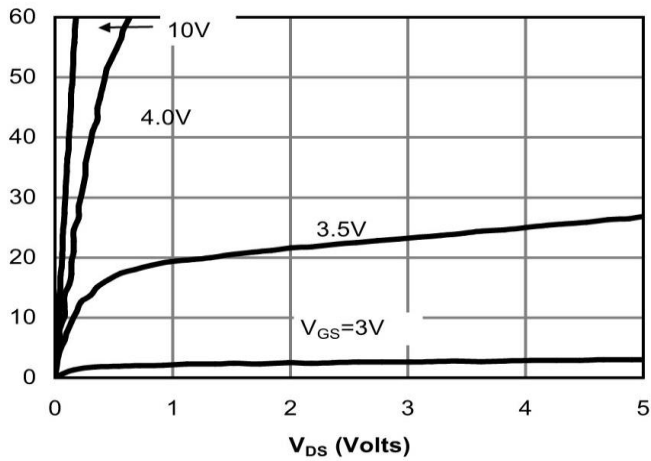


Fig 1: On-Region Characteristics

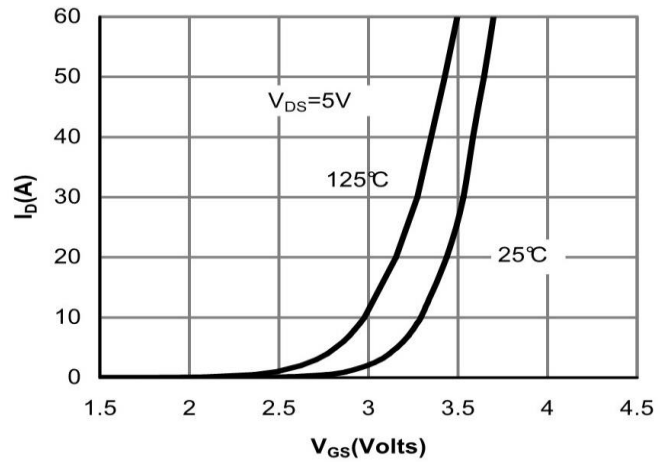


Figure 2: Transfer Characteristics

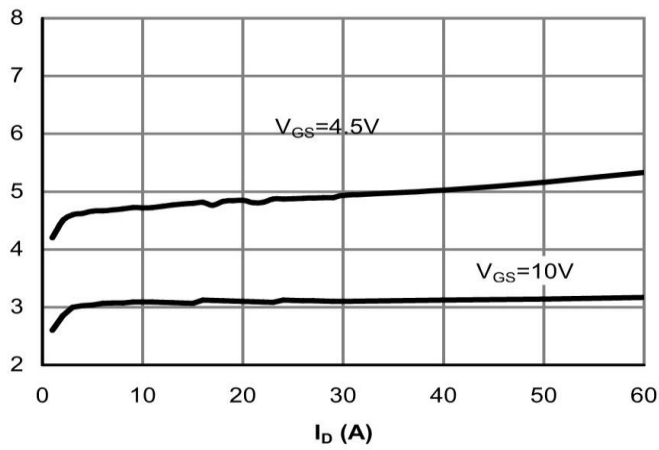


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

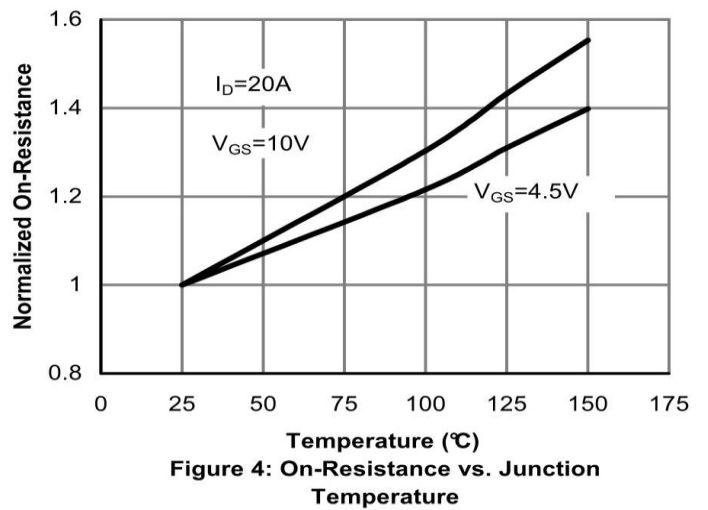
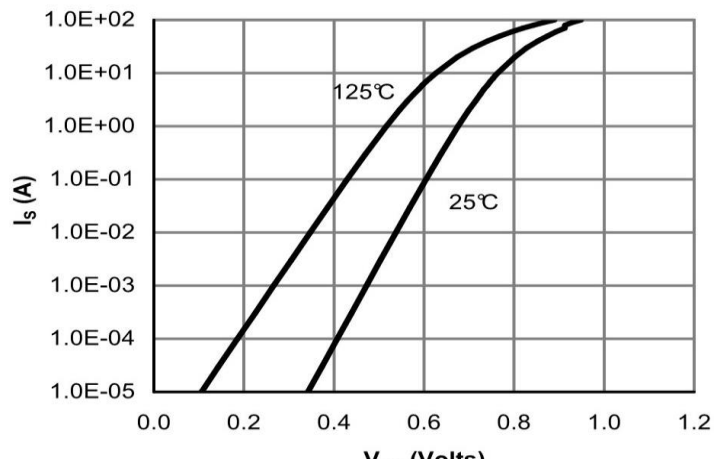
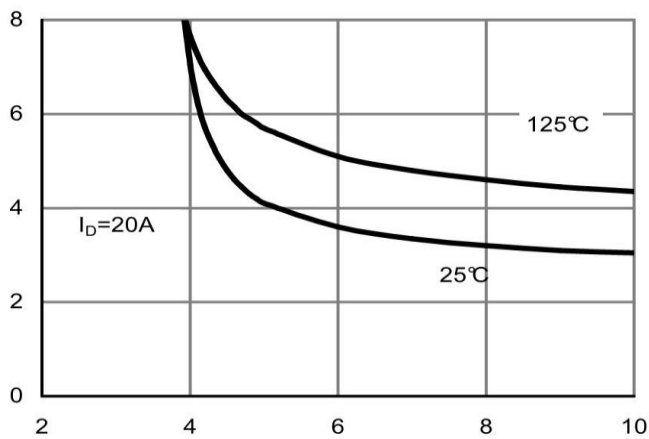


Figure 4: On-Resistance vs. Junction Temperature



MECHANICAL ELECTRICAL AND THERMAL CHARACTERISTICS

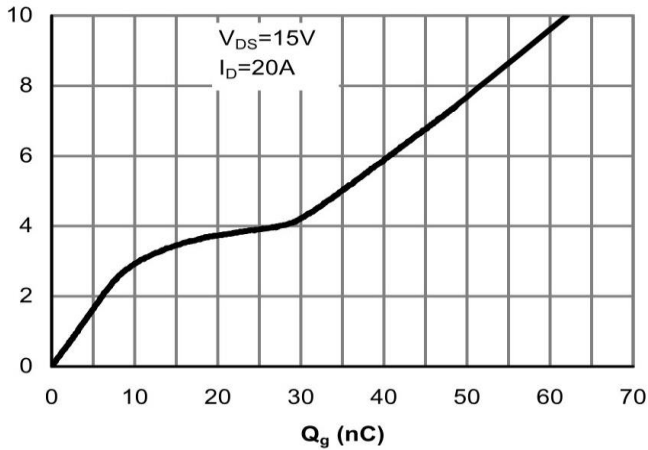


Figure 7: Gate-Charge Characteristics

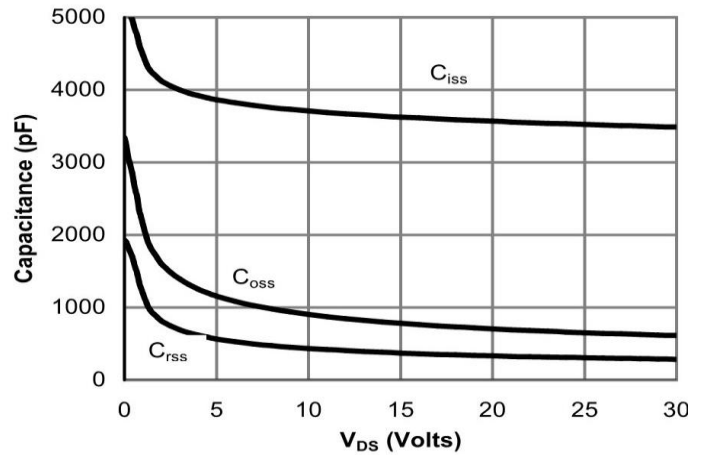


Figure 8: Capacitance Characteristics

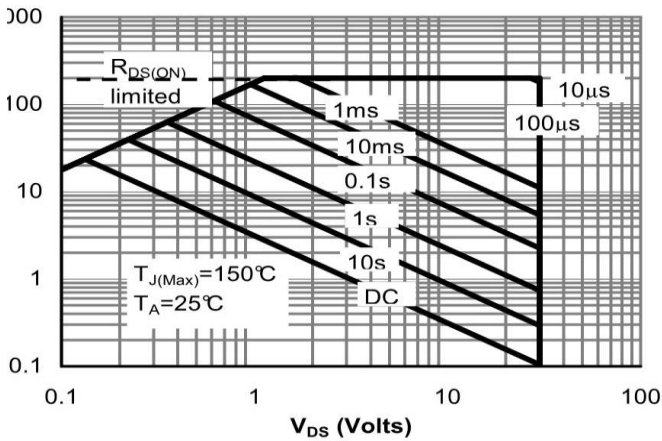


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

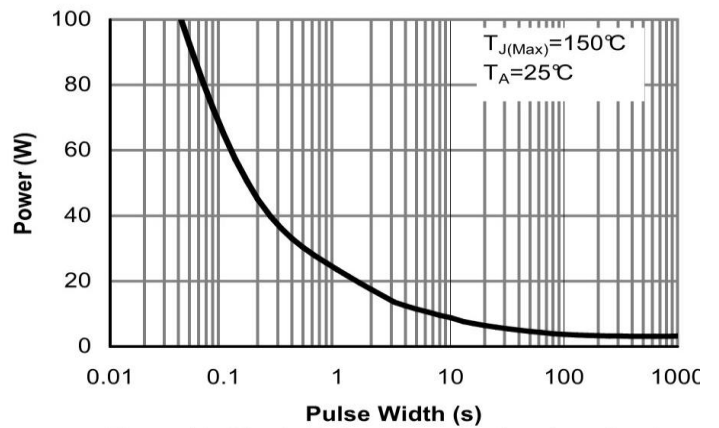


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

