

Description

The SX40N25T is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

General Features

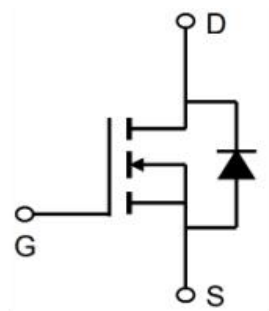
$V_{DS} = 250V$ $I_D = 40A$

$R_{DS(ON)} < 130m\Omega$ @ $V_{GS} = 10V$

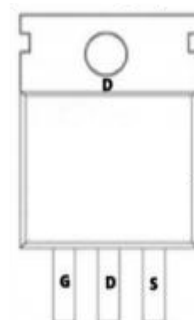
Application

Uninterruptible Power Supply(UPS)

Power Factor Correction (PFC)



TO-263-3L



Absolute Maximum Ratings ($T_c = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
VDSS	Drain-Source Voltage ($V_{GS} = 0V$)	250	V
ID	Continuous Drain Current	40	A
IDM	Pulsed Drain Current	120	A
VGSS	Gate-Source Voltage	± 30	V
EAS	Single Pulse Avalanche Energy	900	mJ
IAS	Avalanche Current	14	A
PD	Power Dissipation ($T_c = 25^\circ C$)	40	W
TJ, Tstg	Operating Junction and Storage Temperature Range	$-55 \sim +150$	$^\circ C$
RthJC	Thermal Resistance, Junction-to-Case	3.2	$^\circ C/W$
RthJA	Thermal Resistance, Junction-to-Ambient	62.5	$^\circ C/W$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	250	275	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = 250V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
IGSS	Gate-Source Leakage	V _{GS} = ±30V	--	--	±100	nA
VGS(th)	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance (Note3)	V _{GS} = 10V, I _D = 22.5A	--	100	130	mΩ
Ciss	Input Capacitance	V _{GS} = 0V, V _{DS} = 25V, f = 1.0MHz	--	1969	--	pF
Coss	Output Capacitance		--	277	--	
Crss	Reverse Transfer Capacitance		--	22	--	
Q _g	Total Gate Charge	V _{DD} = 200V, I _D = 45A, V _{GS} = 10V	--	37.1	--	nC
Q _{gs}	Gate-Source Charge		--	11.4	--	
Q _{gd}	Gate-Drain Charge		--	15.1	--	
td(on)	Turn-on Delay Time	V _{DD} = 125V, I _D = 30A, R _G = 25 Ω	--	23	--	ns
t _r	Turn-on Rise Time		--	85.4	--	
td(off)	Turn-off Delay Time		--	45.6	--	
t _f	Turn-off Fall Time		--	20.4	--	
IS	Continuous Body Diode Current	T _C = 25 °C	--	--	45	A
ISM	Pulsed Diode Forward Current		--	--	180	A
VSD	Body Diode Voltage	T _J = 25°C, I _{SD} = 30A, V _{GS} = 0V	--	--	1.4	V
trr	Reverse Recovery Time	V _{GS} = 0V, I _S = 30A, di _F /dt = 100A/μs	--	264	--	ns
Q _{rr}	Reverse Recovery Charge		--	3	--	μC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . I_{AS} = 36A, V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25 °C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

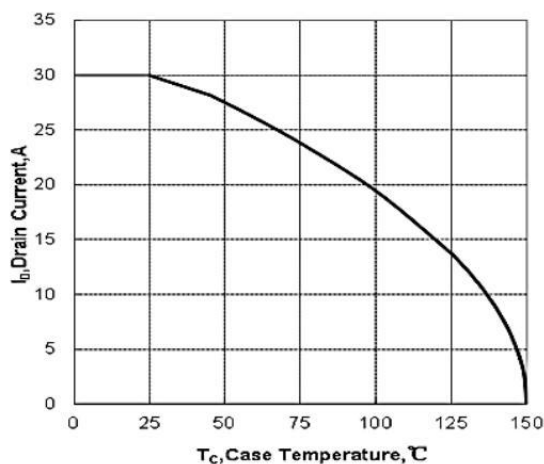


Figure 1 Maximum Continuous Drain Current

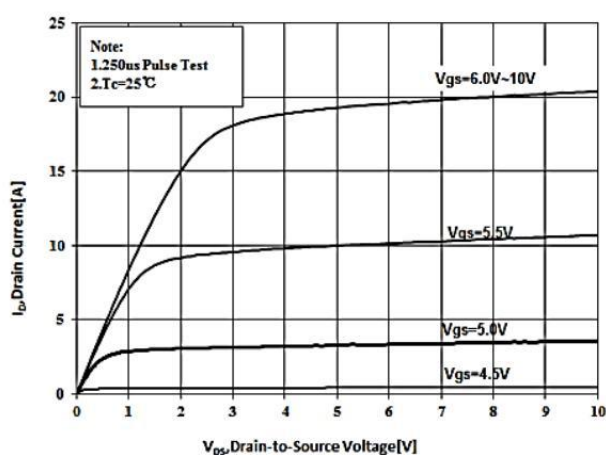


Figure 2 Typical Output Characteristics

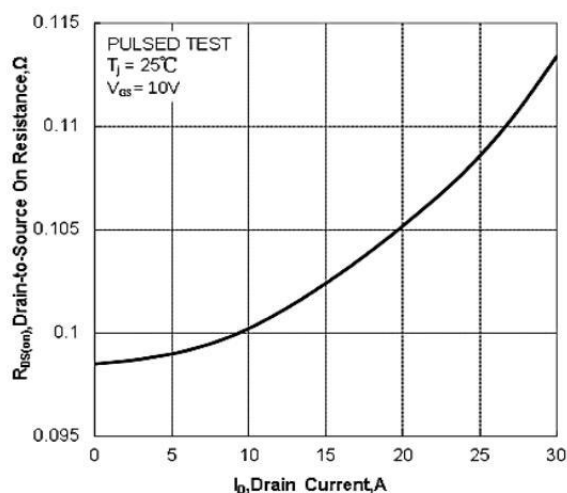


Figure 3 Typical Drain to Source ON Resistance vs Drain Current

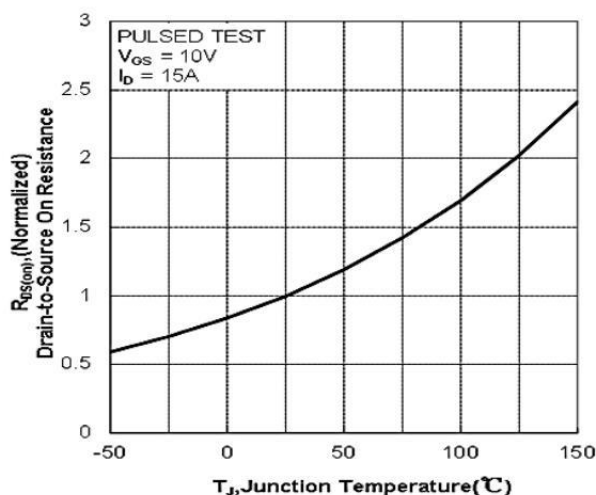


Figure 4 Typical Drain to Source on Resistance vs Junction Temperature

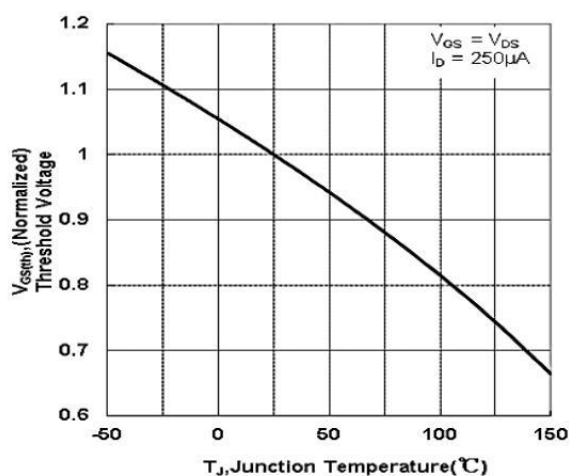


Figure 5 Typical Threshold Voltage vs Junction Temperature

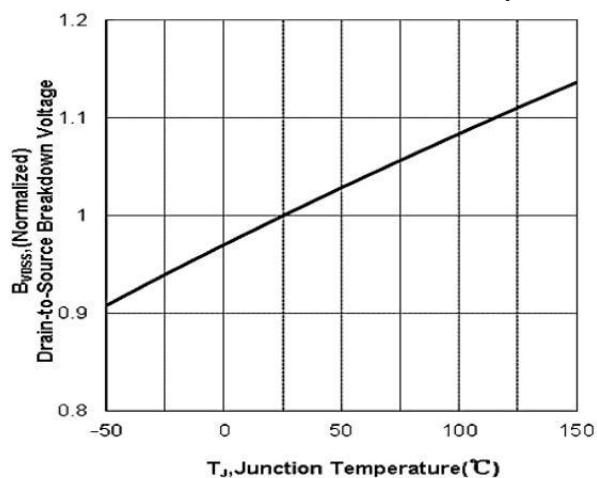


Figure 6 Typical Breakdown Voltage vs Junction Temperature

Typical Characteristics

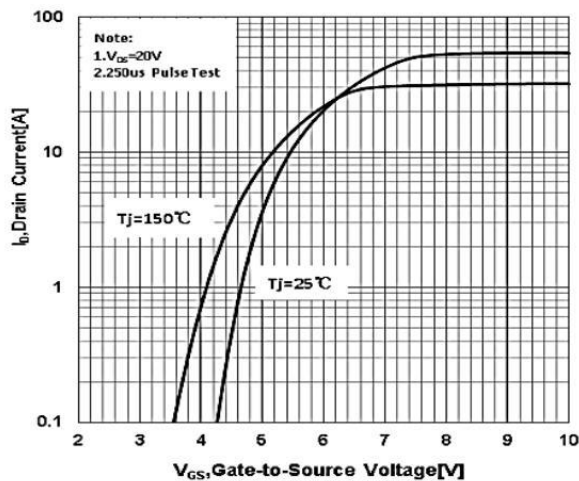


Figure 7 Typical Transfer Characteristics

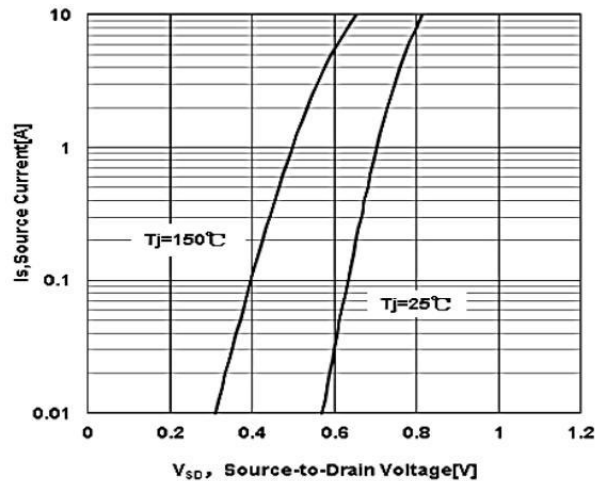


Figure 8 Typical Body Diode Transfer Characteristics

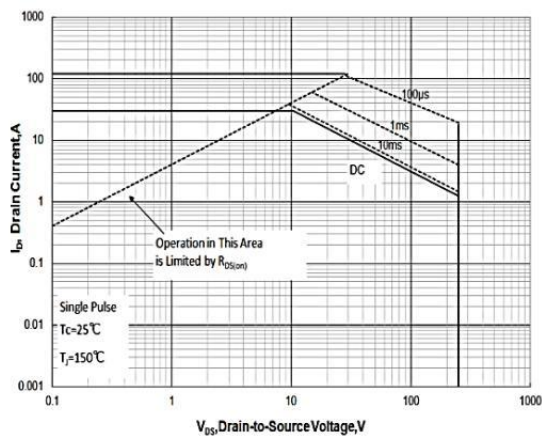


Figure 9 Maximum Forward Bias Safe Operating Area

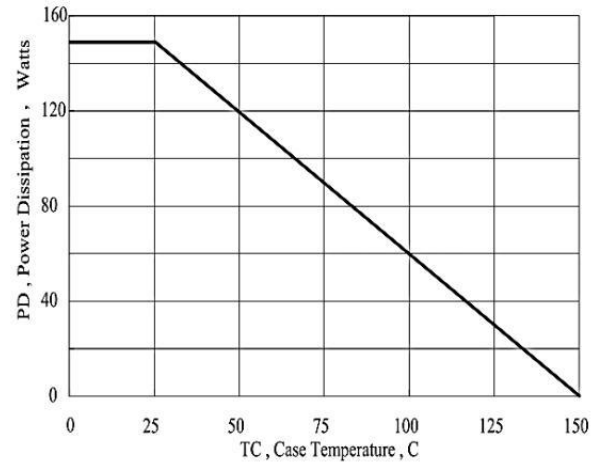


Figure 10 Maximum Power dissipation vs Case Temperature

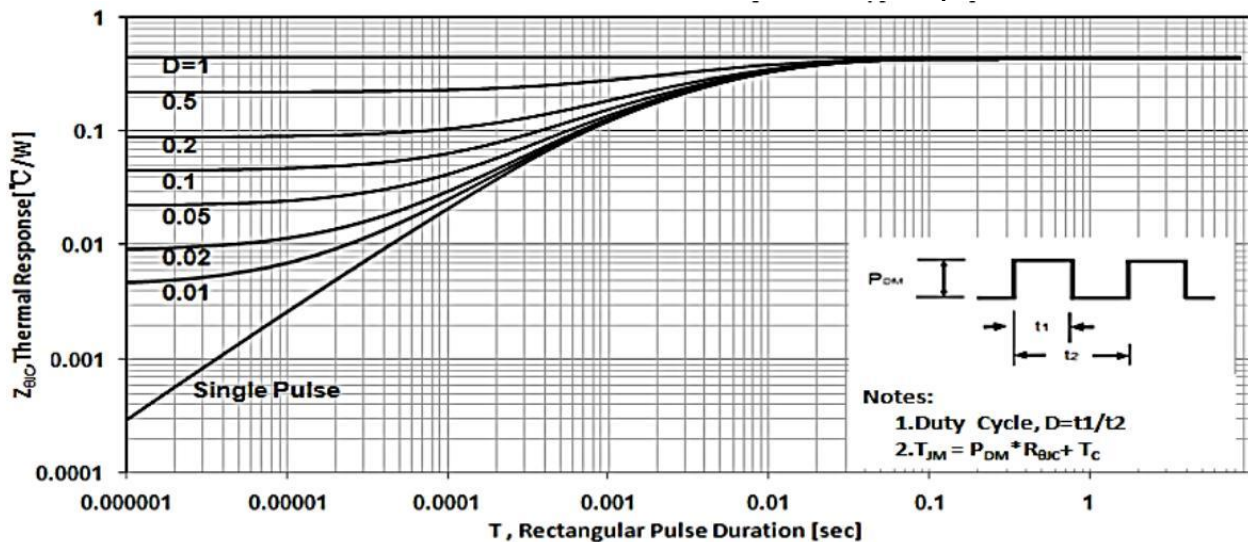
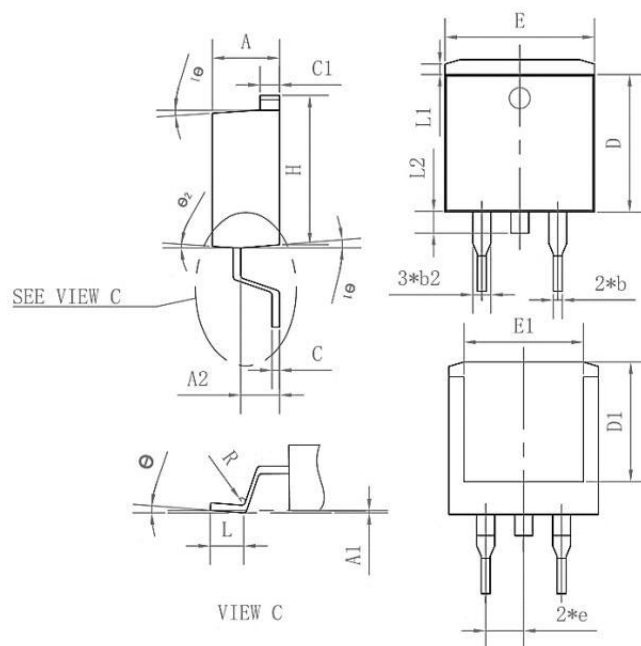


Figure 5 Maximum Effective Thermal Impedance , Junction to Case

Package Mechanical Data-TO-263-3L-SLK



Symbol	Common		
	mm		
	Mim	Nom	Max
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.70
b	0.70	0.80	1.00
b2	1.25	1.36	1.50
C	0.45	0.50	0.65
C1	1.29	1.30	9.40
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
θ1	4°	7°	10°
θ2	0°	3°	6°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-263-3L		800