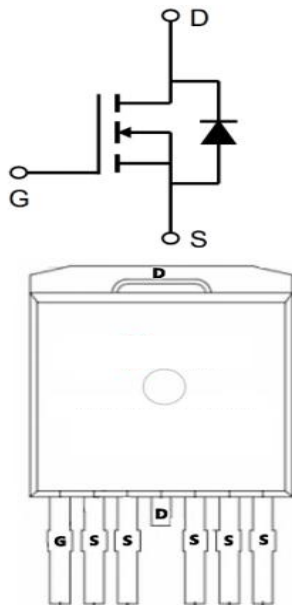


Description

The SX280N04T6 uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

$V_{DS} = 40V$ $I_D = 280A$

$R_{DS(ON)} < 1.5m\Omega$ @ $V_{GS}=10V$

Application

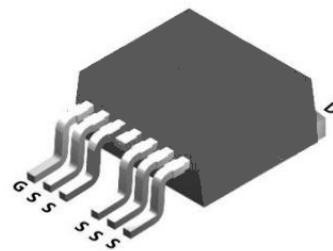
BMS

BLDC

UPS

High junction temperature (175°C)

TO-263-6L



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

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_{D@TC=25^\circ C}$	Continuous Drain Current, $V_{GS} @ 10V$	280	A
$I_{D@TC=100^\circ C}$	Continuous Drain Current, $V_{GS} @ 10V$	200	A
I_{DM}	Pulsed Drain Current	1120	A
E_{AS}	Single Pulsed Avalanche Energy	818	mJ
I_{AS}	Avalanche Current	70	A
$PD@TC=25^\circ C$	Power Dissipation	230	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	60	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.5	$^\circ C/W$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$

N-Channel Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	48	-	V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V,$	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}= \pm 20V$	-	-	± 100	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.8	2.5	V
RDS(on)	Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=30A$	-	1.2	1.5	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	1.7	2.5	m Ω
Ciss	Input Capacitance	$V_{DS}=20V, V_{GS}=0V,$ $f=1.0MHz$	-	8300	-	pF
Coss	Output Capacitance		-	1510	-	pF
Crss	Reverse Transfer Capacitance		-	130	-	pF
Qg	Total Gate Charge	$V_{DS}=20V, I_D=85A,$ $V_{GS}=10V$	-	127	-	nC
Qgs	Gate-Source Charge		-	35	-	nC
Qgd	Gate-Drain("Miller") Charge		-	26	-	nC
td(on)	Turn-on Delay Time	$V_{DD}=20V, I_D=85A,$ $R_G=1.6\Omega, V_{GS}=10V$	-	22.5	-	ns
tr	Turn-on Rise Time		-	6.7	-	ns
td(off)	Turn-off Delay Time		-	80.3	-	ns
tr	Turn-off Fall Time		-	26.9	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	300	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	750	A
VSD	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	$T_J=25^{\circ}\text{C},$ $I_f=I_{S,dI/dt}=100A/\mu s$	-	100	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	163	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The EAS data shows Max. rating . The test condition is $V_{DD}=32V, V_{GS}=10V, L=0.1mH, I_{AS}=70A$
- 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

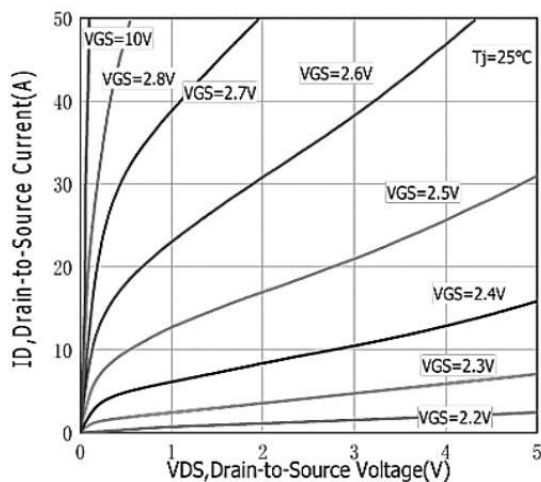


Figure.1 Typical Output Characteristics

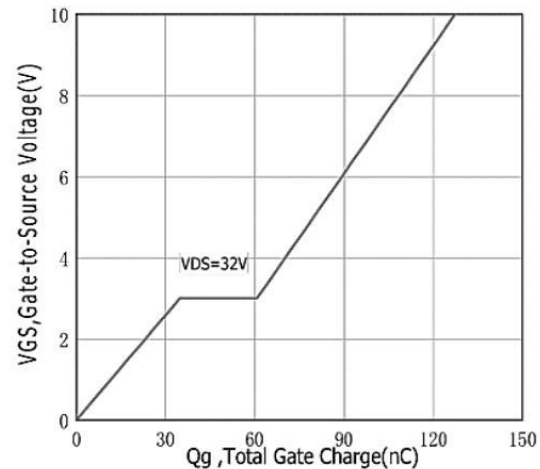


Figure.2 Typical Gate Charge vs Gate to Source Voltage

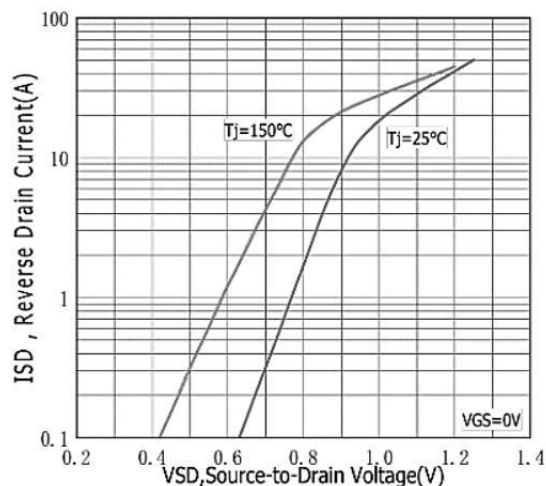


Figure.3 Typical Body Diode Transfer Characteristics

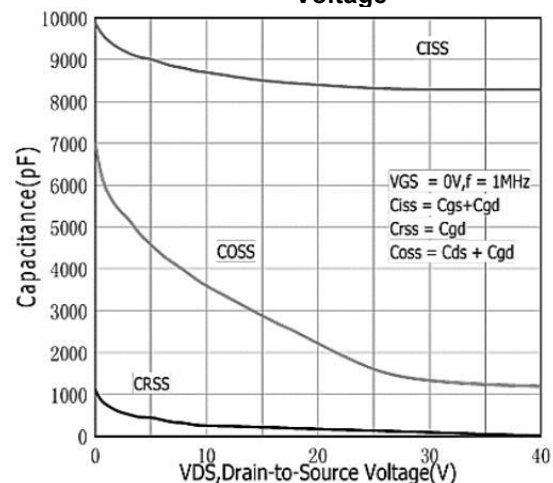


Figure 4: Body Diode Characteristics

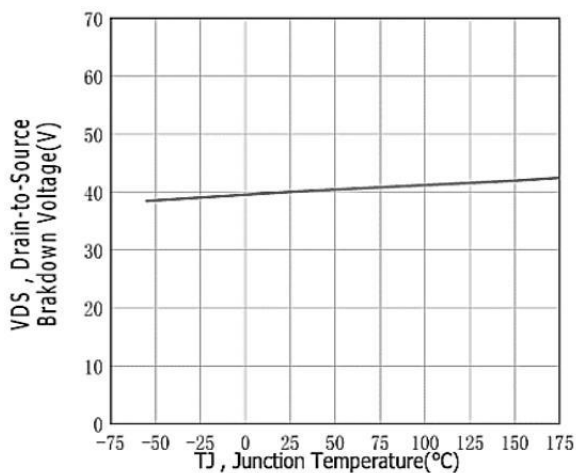


Figure.5 Typical Breakdown Voltage vs Junction Temperature

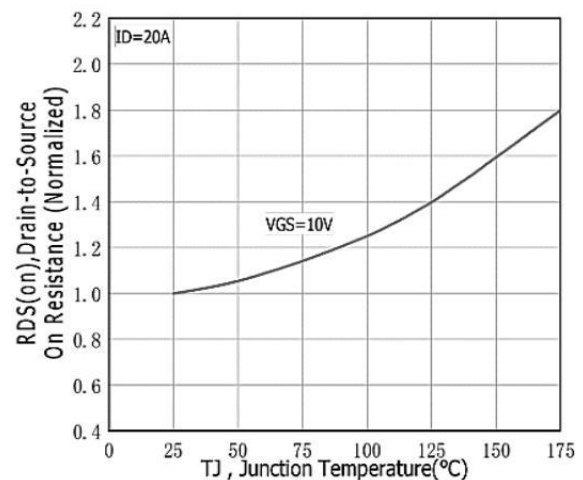


Figure 6: Capacitance Characteristics

Typical Characteristics

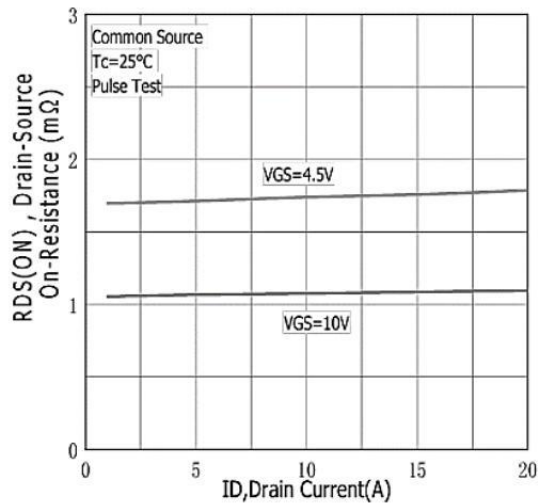


Figure.7 Typical Drain to Source ON Resistance vs Drain Current

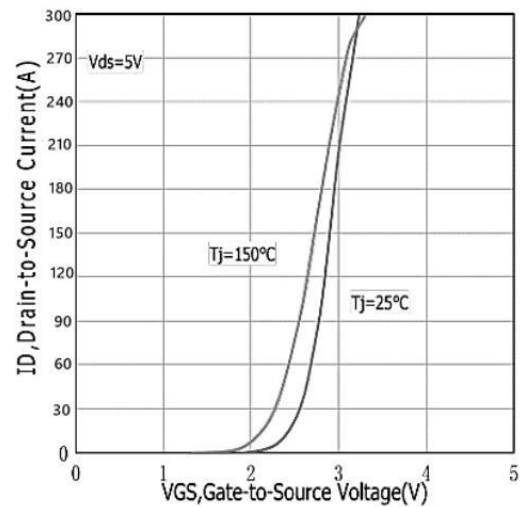


Figure.10 Typical Transfer Characteristics

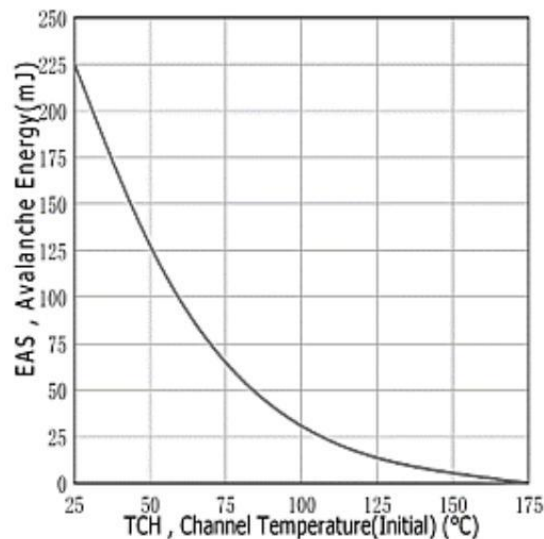


Figure.9 Maximum EAS vs Channel Temperature

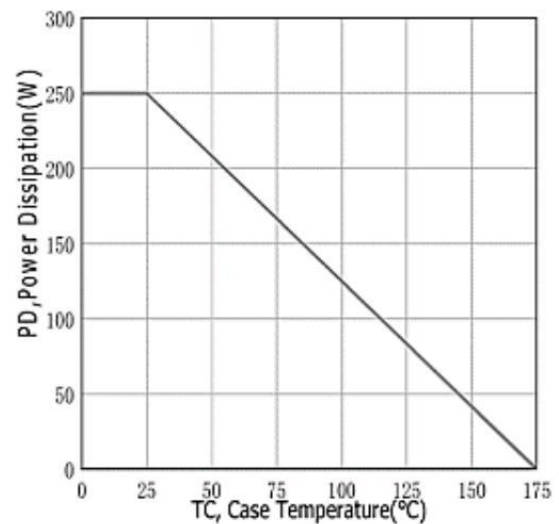


Figure.12 Maximum Power Dissipation vs Case Temperature

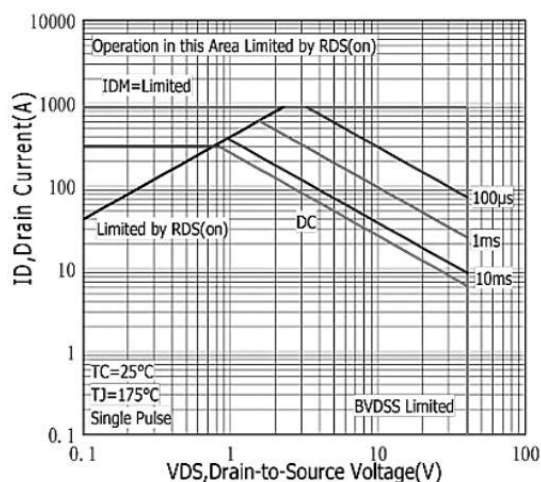


Figure 11: Maximum Safe Operating Area

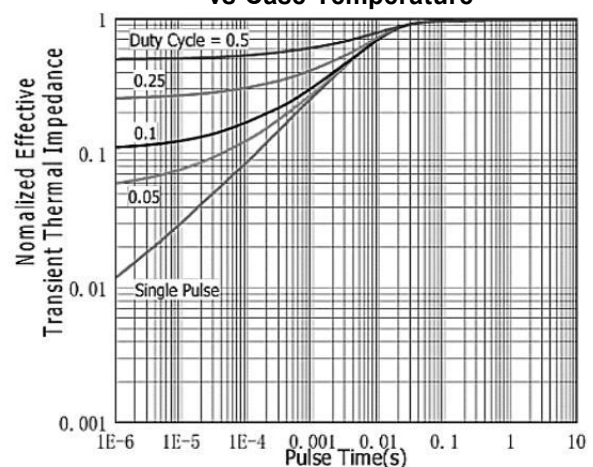
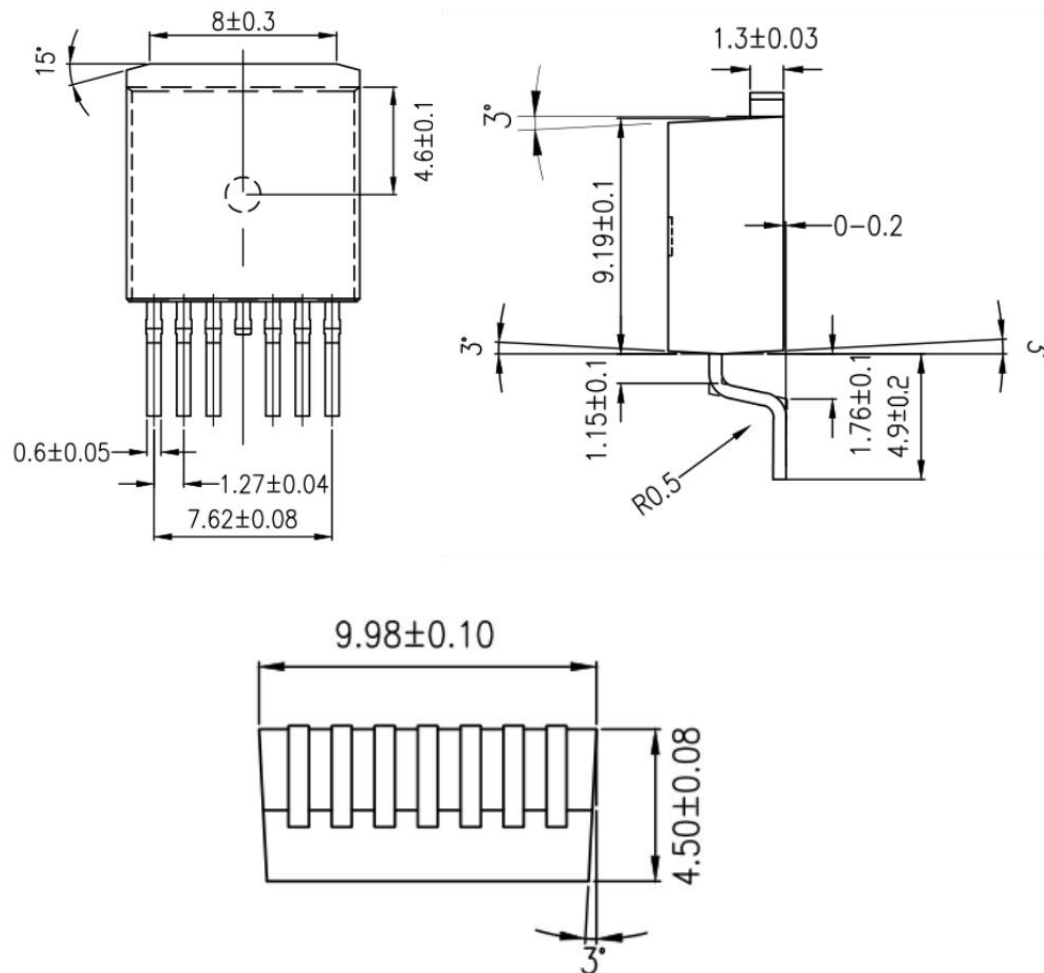


Figure.12: Maximum Effective Transient Thermal Impedance, Junction-to-Cas

Package Mechanical Data:TO263-6L



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-263-6L		800