

DESCRIPTION

The ANM007P015ST uses new technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.



GENERAL FEATURES

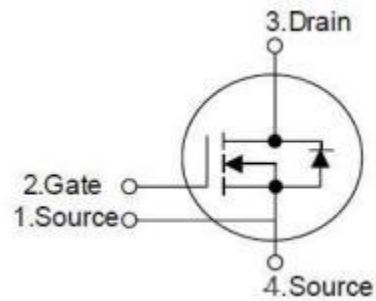
$V_{DS} = 150V$ $I_D = 140A$

$R_{DS(on)} < 9m\Omega @ V_{GS} = 10V$ (Type : 7.4mΩ)

Application

DC/DC Converter

Power Management Switches



MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_c = 25^\circ C$ unless otherwise specified)

Symbol	Parameter/ Test Conditions	Values	Unit
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	
$I_D @ T_c = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	140	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	60	
IDM	Pulsed Drain Current ²	520	A
EAS	Single Pulse Avalanche Energy ³	506	mJ
IAS	Avalanche Current	65	A
$P_D @ T_c = 25^\circ C$	Total Power Dissipation ⁴	179	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	25	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	0.75	$^\circ C/W$

N-CHANNEL MOSFET

 ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	150	172		V
IDSS@T _J =25°C	Zero Gate Voltage Drain Current	$V_{DS}=150V, V_{GS}=0V$			1	μA
IDSS@T _J =100°C					100	μA
IGSS	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			±100	nA
VGS(th)	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	2.0	3.2	4.5	v
RDS(on)	Static Drain-Source on-Resistance ⁴	$V_{GS}=10V, I_D=20A$		7.4	9.0	mΩ
gfs	Forward Transconductance ⁴	$V_{DS} = 5V, I_D = 20A$		60		S
Ciss	Input Capacitance	$V_{DS}=75V, V_{GS}=0V, f=1MHz$		2181		pF
Coss	Output Capacitance				363	pF
Crss	Reverse Transfer Capacitance				7.9	pF
Rg	Gate Resistance	f = 1MHz		2.5		Ω
Qg	Total Gate Charge	$V_{DS}=75V, I_D=20A, V_{GS}=10V$		30		nC
Qgs	Gate-Source Charge				7.5	nC
Qgd	Gate-Drain Charge				6.5	nC
td(on)	Turn on Delay Time	$V_{DD}=75V, I_D=20A, R_G=3\Omega, V_{GS}=10V$		40		ns
tr	Rise Time				47	ns
td(off)	Turn off Delay Time				80	ns
tf	Fall Time				23	ns
IS	Maximum Continuous Drain to Source Diode Forward Current	$T_C=25^\circ\text{C}$			140	A
VSD	Drain to Source Diode Forward Voltage ⁴	$V_{GS}=0V, I_S=-6.2A$			1.2	V
trr	Body Diode Reverse Recovery Time	$I_f=20A, dI/dt=100A/\mu s$		99		ns
Qrr	Body Diode Reverse Recovery Charge				318	nC

Note :

- 1、 The data tested by surface mounted on a 1 inch² 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 $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=65A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

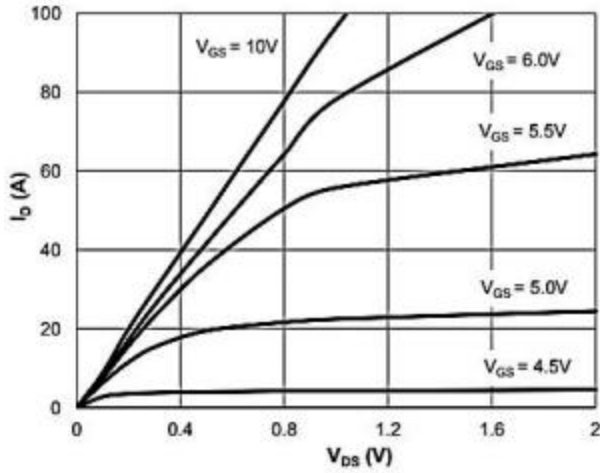


Figure 1: Saturation Characteristics

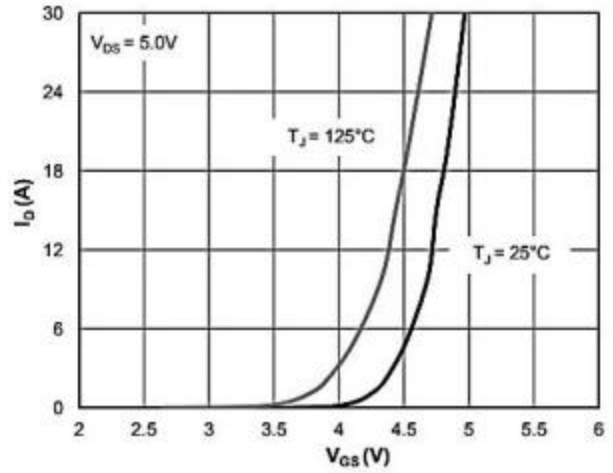


Figure 2: Transfer Characteristics

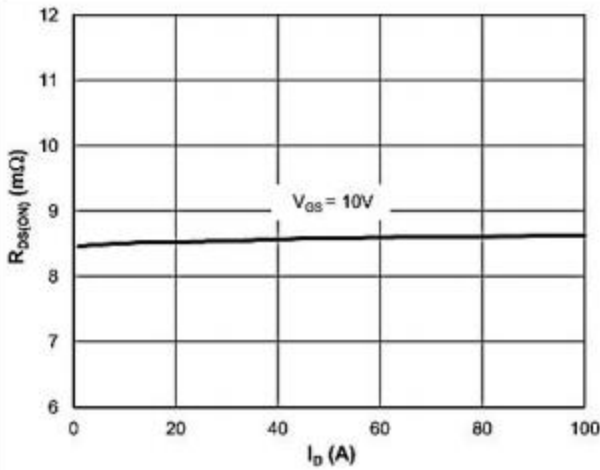


Figure 3: $R_{DS(ON)}$ vs. Drain Current

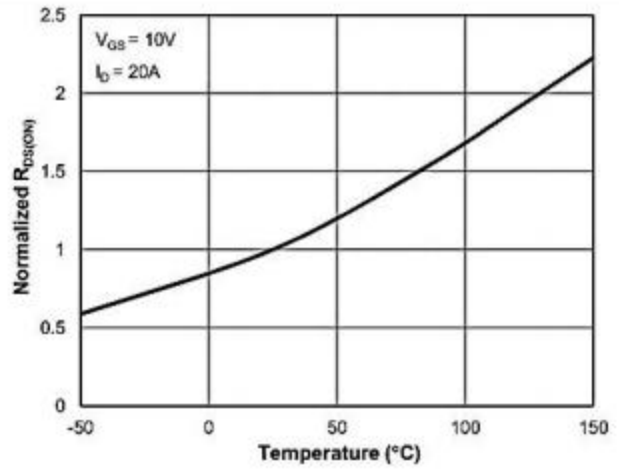


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

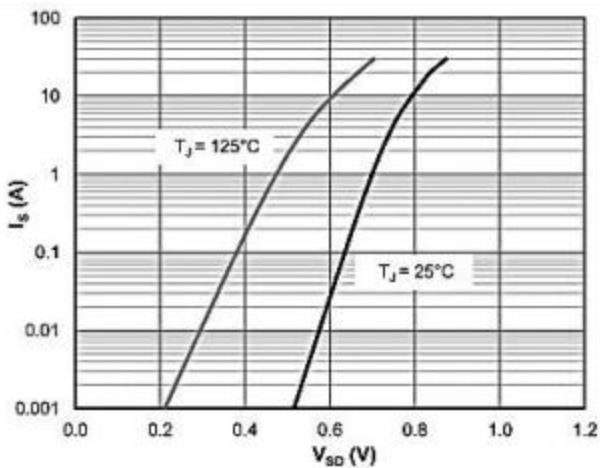


Figure 5: Body-Diode Characteristics

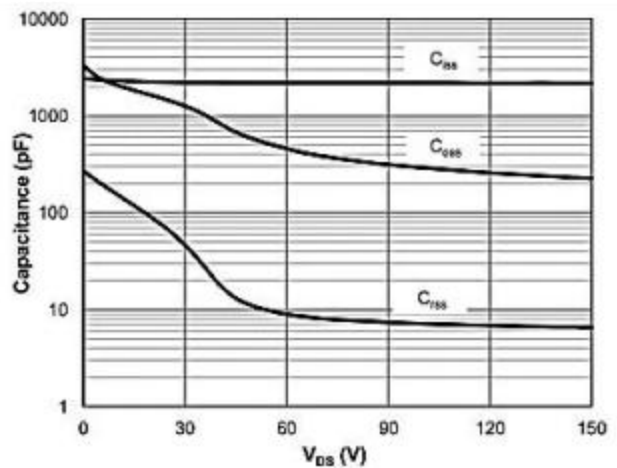


Figure 6: Capacitance Characteristics

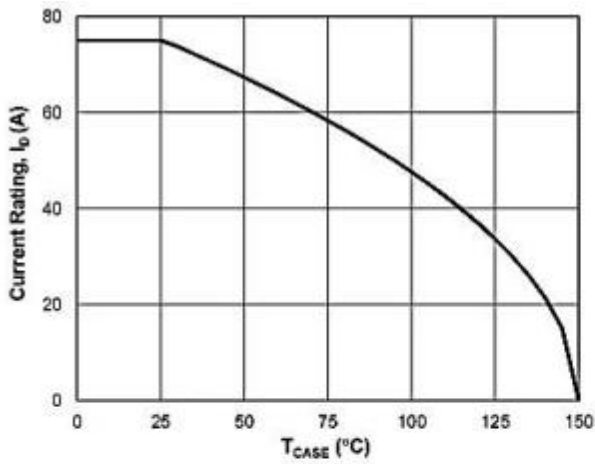


Figure 7: Current De-rating

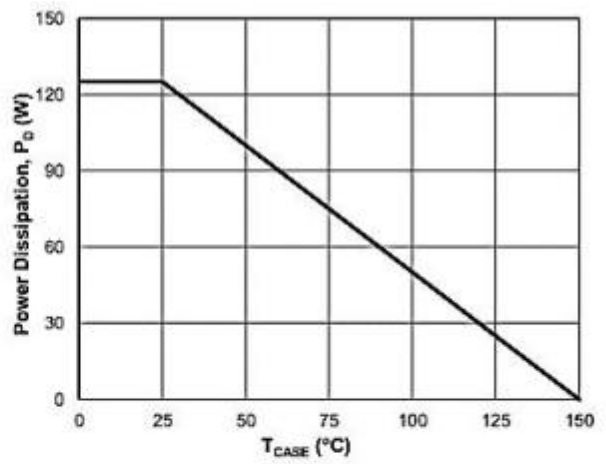


Figure 8: Power De-rating

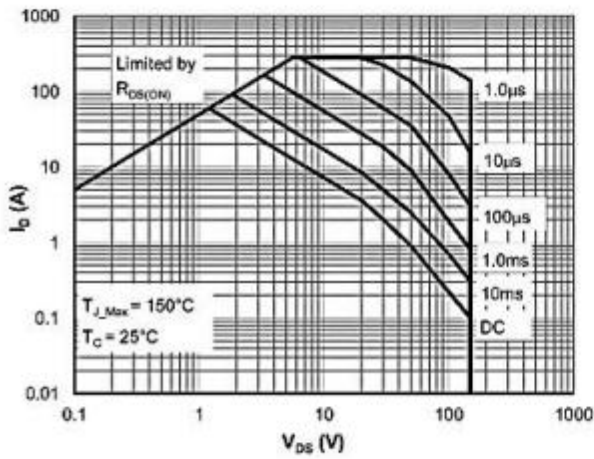


Figure 9: Maximum Safe Operating Area

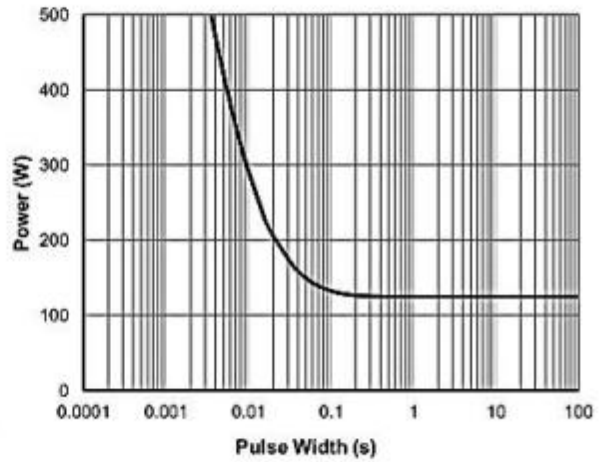


Figure 10: Single Pulse Power Rating, Junction-to-Case

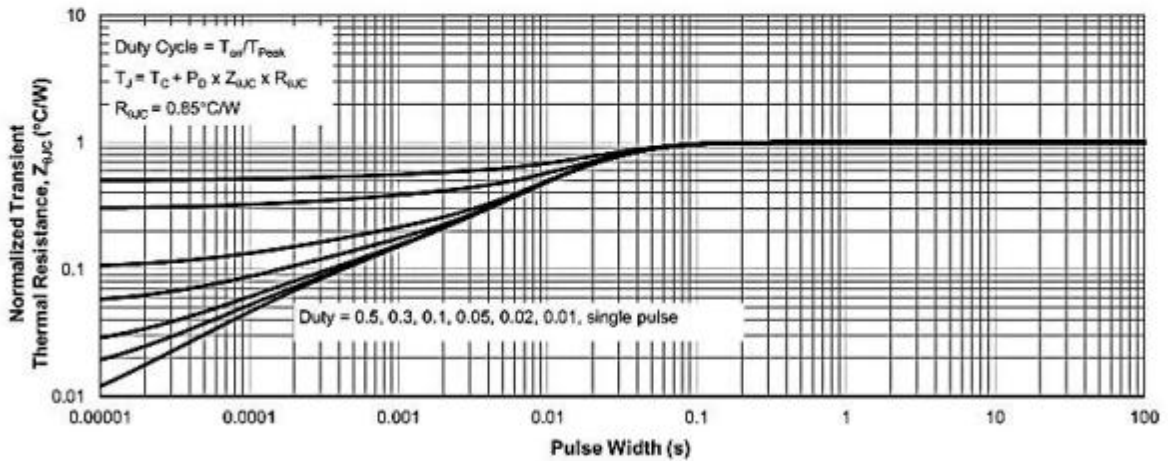
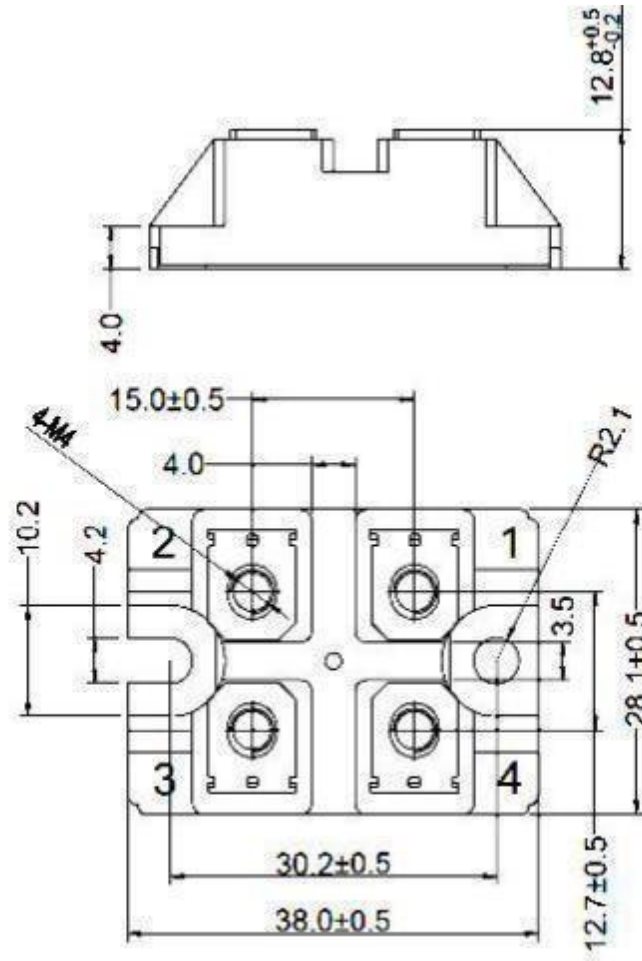


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Dimensions: SOT-227



Dimensions in (mm)
Figure 9 . Package Outline