

DESCRIPTION

The ANM005P015ST 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.



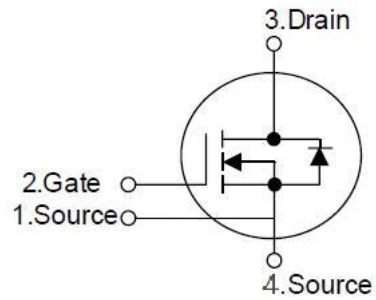
GENERAL FEATURES

$V_{DS} = 150V$ $I_D = 240A$

$R_{DS(on)} < 5.8m\Omega @ V_{GS} = 10V$ (Type : 4.8mΩ)

Application

- DC/DC Converter
- LED Backlighting
- 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, $V_{GS} @ -10V^1$	240	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ -10V^1$	185	
IDM	Pulsed Drain Current ²	720	A
EAS	Single Pulse Avalanche Energy ³	1764	mJ
IAS	Avalanche Current	64	A
$P_D @ T_C = 25^\circ C$	Total Power Dissipation ⁴	326	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	0.46	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	62	$^\circ C/W$

N-CHANNEL MOSFET

ELECTRICAL CHARACTERISTICS ($T_c=25^{\circ}C$ 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	165		V
IDSS	Zero Gate Voltage Drain Current	$V_{DS}=140V, V_{GS}=0V$			1	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	2.9	4.0	v
RDS(on)	Static Drain-Source on-Resistance ⁴	$V_{GS}=10V, I_D=40A$		4.8	5.8	mΩ
gfs	Forward Transconductance ⁴	$V_{DS} = 5V, I_D = 15A$		33		S
Ciss	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		4200		pF
Coss	Output Capacitance			2867		pF
Crss	Reverse Transfer Capacitance			215		pF
Qg	Total Gate Charge	$V_{DS}=75V, I_D=70A, V_{GS}=10V$		65		nC
Qgs	Gate-Source Charge			20		nC
Qgd	Gate-Drain Charge			19		nC
td(on)	Turn on Delay Time	$V_{DD}=75V, R_G=3\Omega$ $V_{GS}=10V, R_L=1.07\Omega$		55		ns
tr	Rise Time			200		ns
td(off)	Turn off Delay Time			85		ns
tf	Fall Time			40		ns
ISD	Source-Drain Current (Body Diode)				240	A
VSD	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=20A$			1.2	V
trr	Body Diode Reverse Recovery Time	$I_F=20A, dI/dt=500A/\mu s$		101		ns
Qrr	Body Diode Reverse Recovery Charge				1240	

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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 $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=64A$
- 4、The power dissipation is limited by $150^{\circ}C$ 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

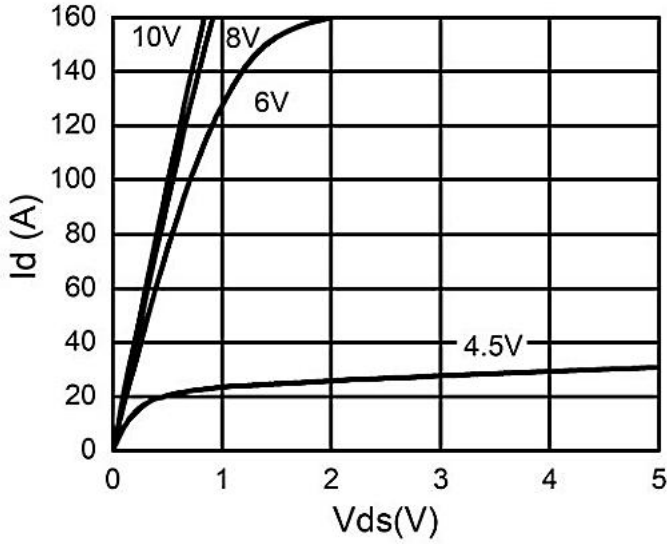


Figure 1. Output Characteristics

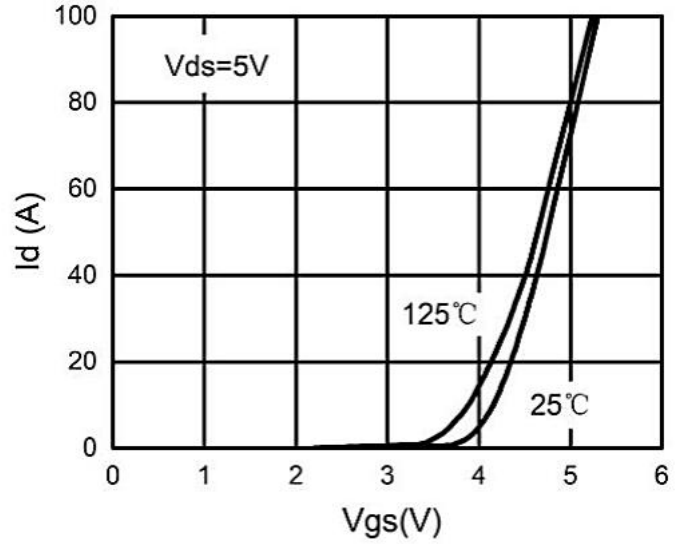


Figure 2. Transfer Characteristics

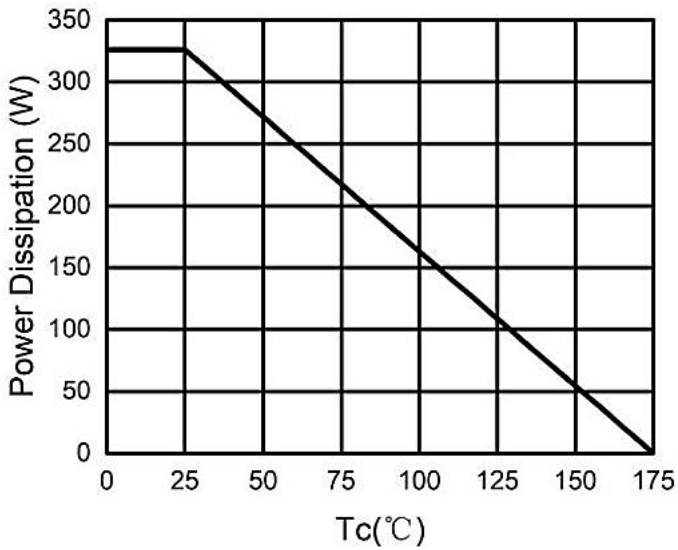


Figure 3. Power Dissipation

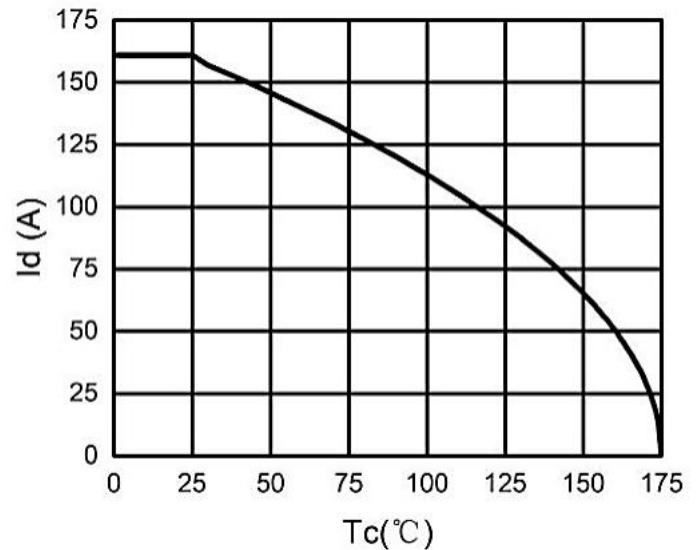


Figure 4. Drain Current

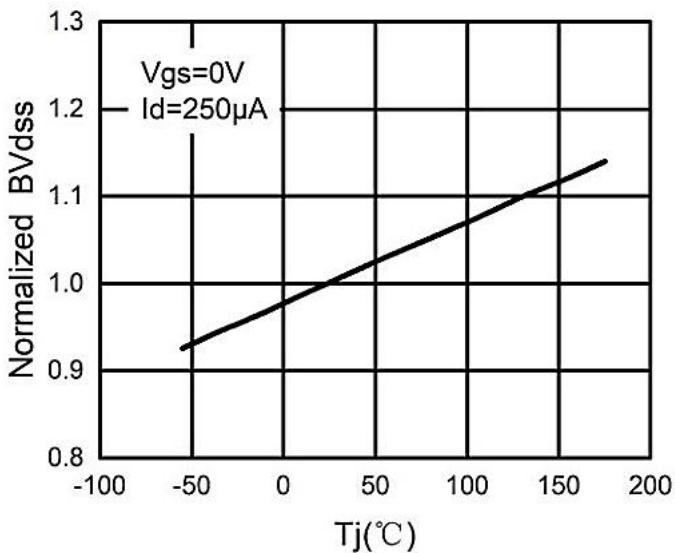


Figure 5. BV_{DSS} vs Junction Temperature

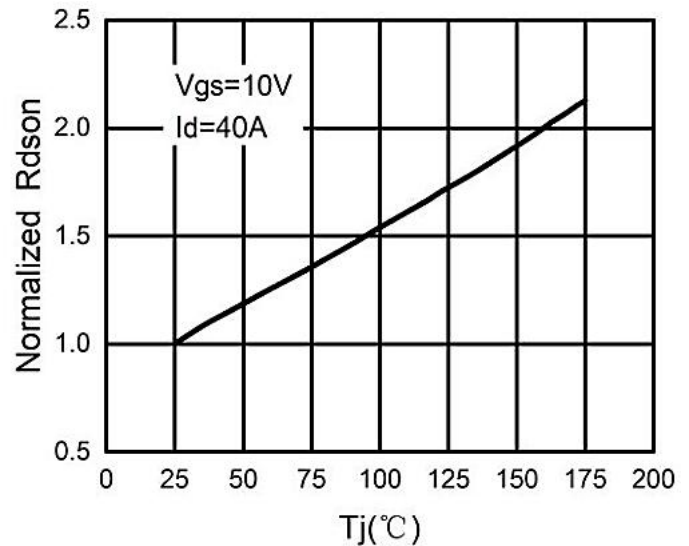


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

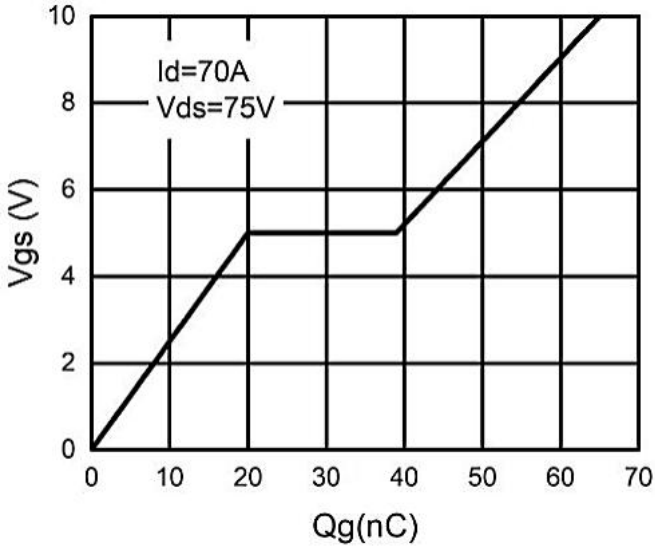


Figure 7. Gate Charge Waveforms

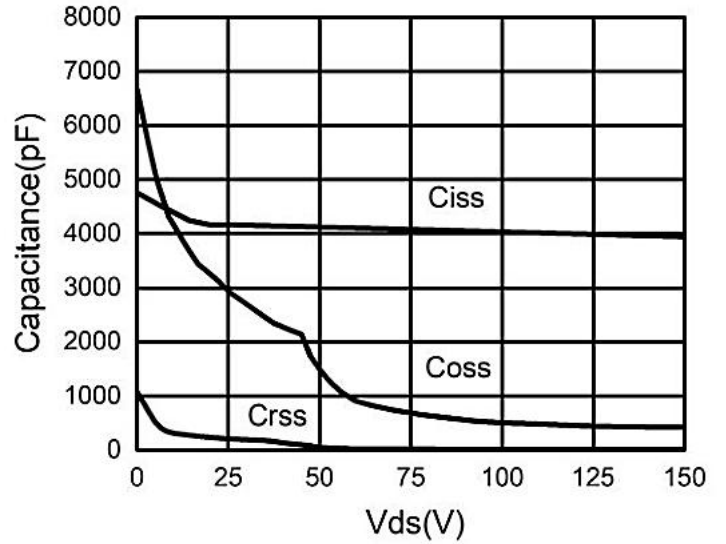


Figure 8. Capacitance

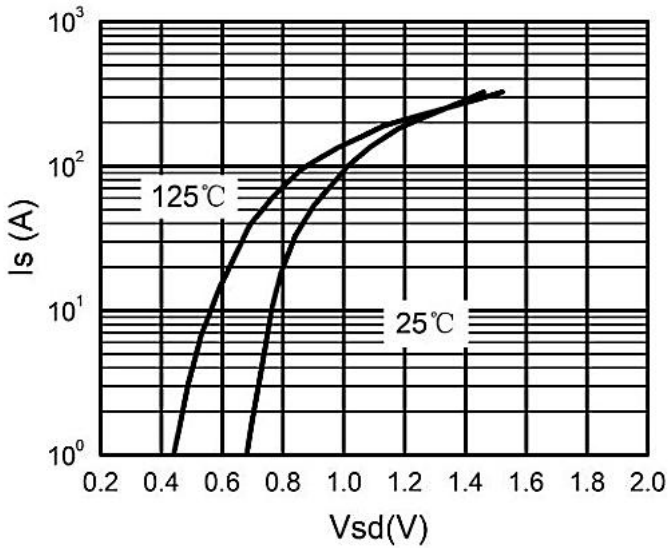


Figure 9. Body-Diode Characteristics

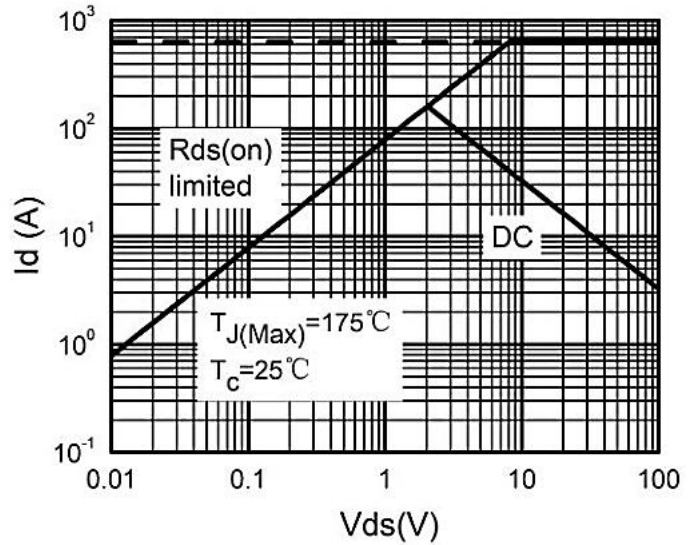


Figure 10. Maximum Safe Operating Area

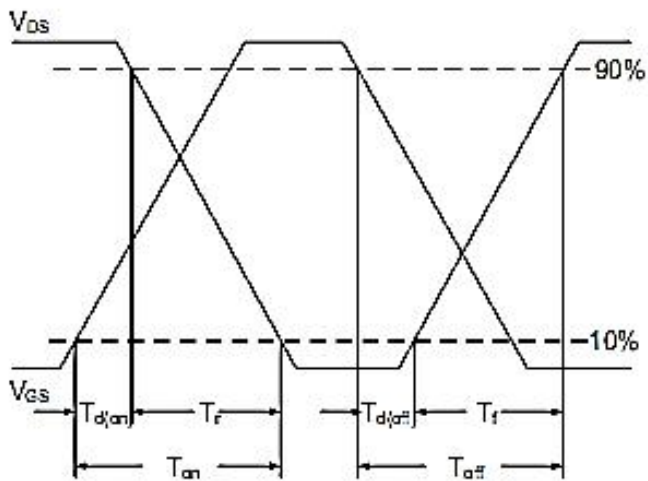


Figure 11. Switching Time Waveform

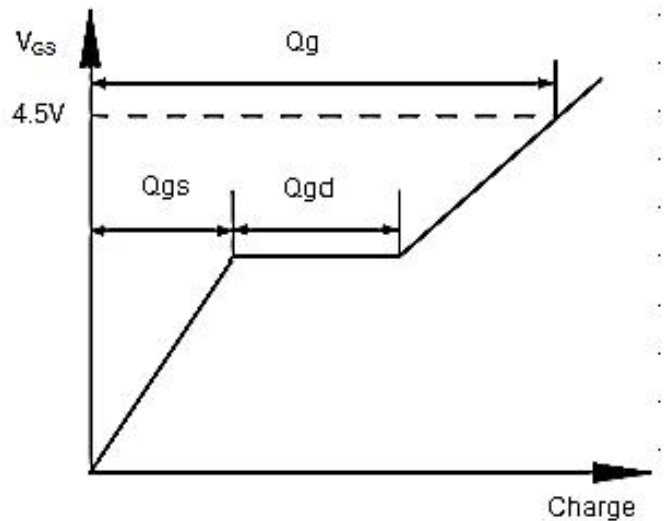


Figure 12. Gate Charge Waveform

