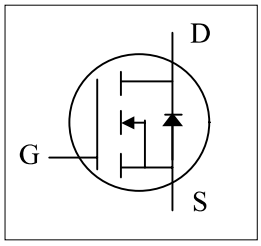
N-Channel Power MOSFET

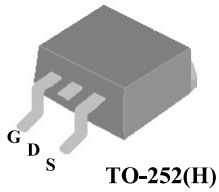
- ▼ **Capable of 2.5V Gate Drive**
- ▼ **Small Size & Ultra_Low $R_{DS(ON)}$**
- ▼ **RoHS Compliant & Halogen-Free**
- ▼ **ESD (HBM) TEST Passed 900V**



BV_{DSS}	20V
$R_{DS(ON)}$	4.8mΩ
I_D[3]	60A

Description

AP2055K series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.



TO-252(H)

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25℃	Drain Current, V_{GS} @ 4.5V[3]	60	A
I_D@T_A=70℃	Drain Current, V_{GS} @ 4.5V[3]	40	A
I_{DM}	Pulsed Drain Current[1]	180	A
EAS	Single pulse avalanche energy	190	mJ
P_D@T_A=25℃	Total Power Dissipation	3.13	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	5	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	40	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=20A	-	4.8	5.5	mΩ
		V_{GS}=2.5V, I_D=12A	-	-	7	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=1mA	0.5	-	0.9	V
g_{fs}	Forward Transconductance	V_{DS}=5V, I_D=20A	-	30	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge	I_D=20A	-	32	59.2	nC
Q_{gs}	Gate-Source Charge	V_{DS}=10V	-	6	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	6.5	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10V	-	10	-	ns
t_r	Rise Time	I_D=1A	-	18	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω	-	30	-	ns
t_f	Fall Time	V_{GS}=5V	-	18	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2200	4400	pF
C_{oss}	Output Capacitance	V_{DS}=10V	-	500	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	200	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1.4	2.8	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=2.5A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time	I_S=20A, V_{GS}=0V,	-	30	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	26	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in^2 2oz copper pad of FR4 board, t ≤10sec; 135°C/W when mounted on min. copper pad.

4.Maximum current limited by package.

Typical Electrical and Thermal Characteristics (Curves)

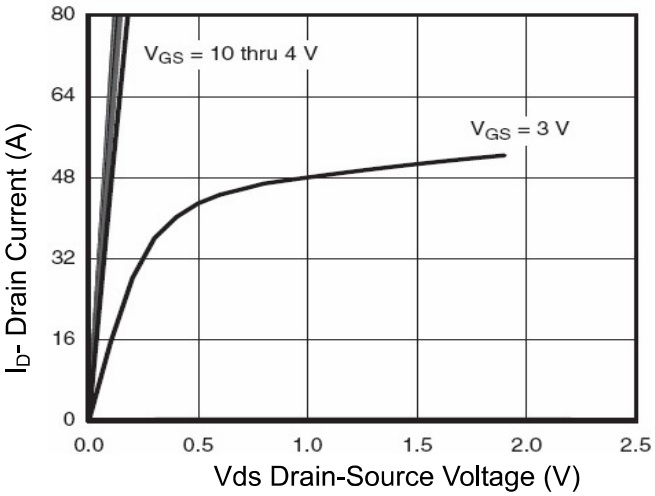


Figure 1 Output Characteristics

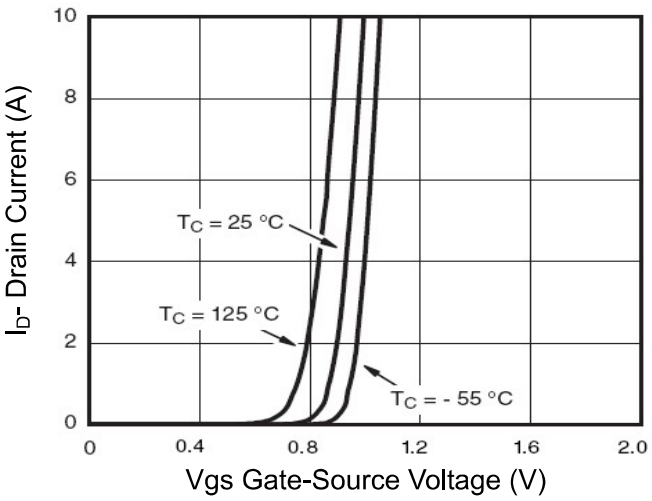


Figure 2 Transfer Characteristics

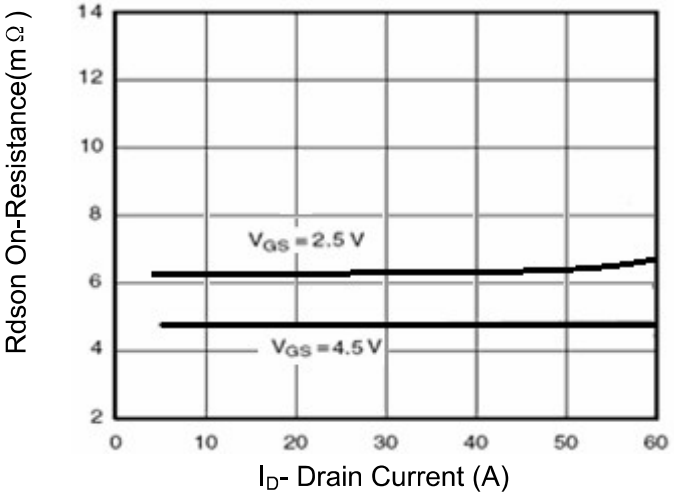


Figure 3 Rdson- Drain Current

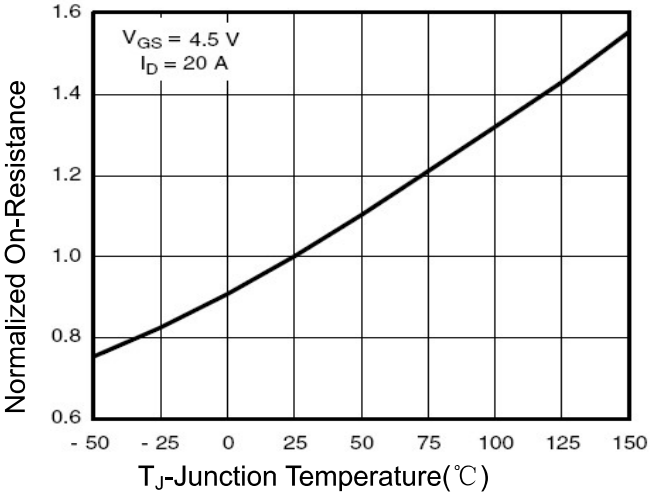


Figure 4 Rdson-JunctionTemperature

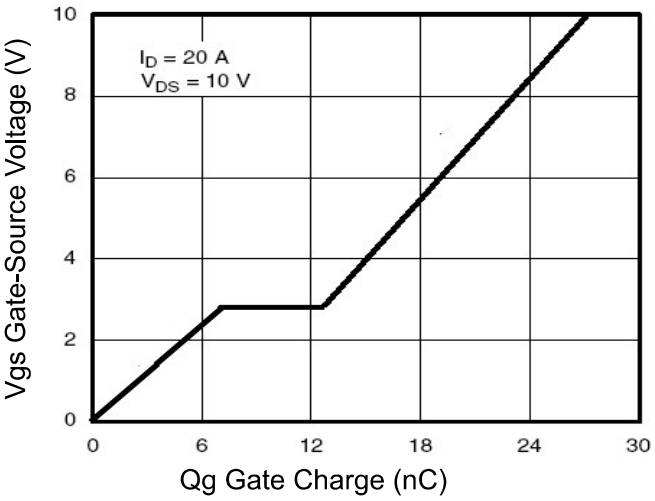


Figure 5 Gate Charge

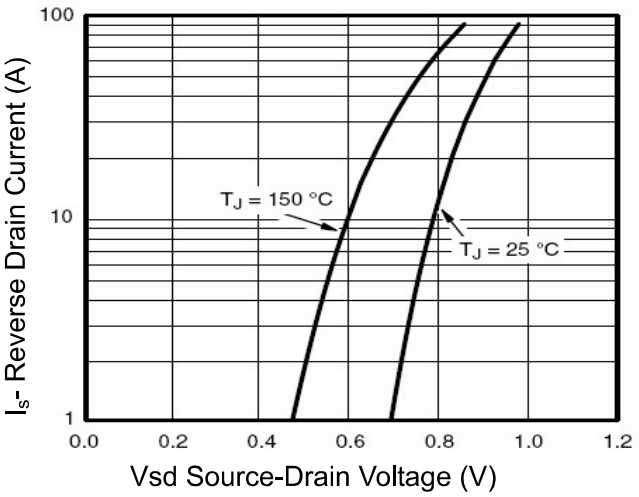


Figure 6 Source- Drain Diode Forward

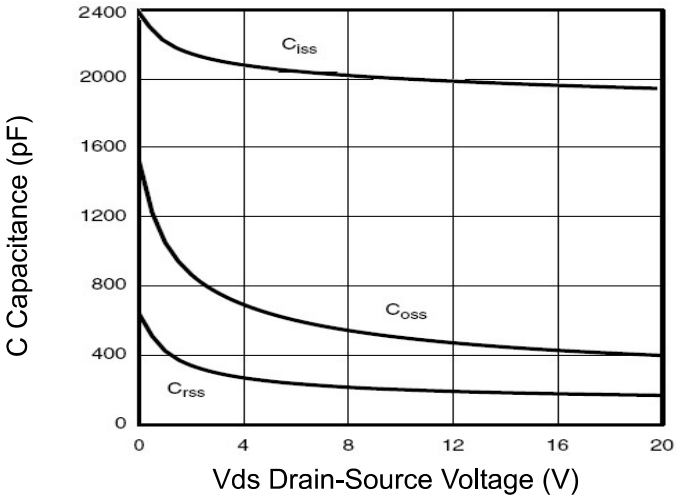


Figure 7 Capacitance vs Vds

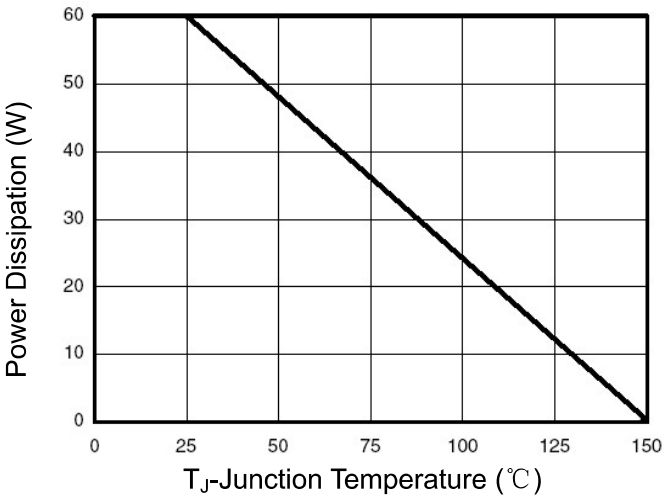


Figure 9 Power De-rating

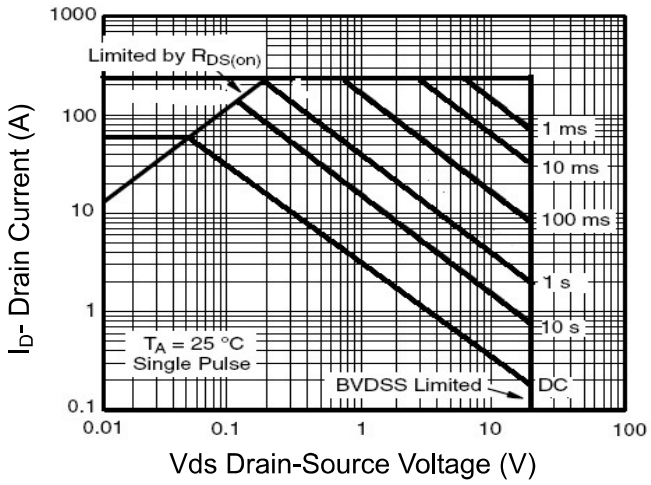


Figure 8 Safe Operation Area

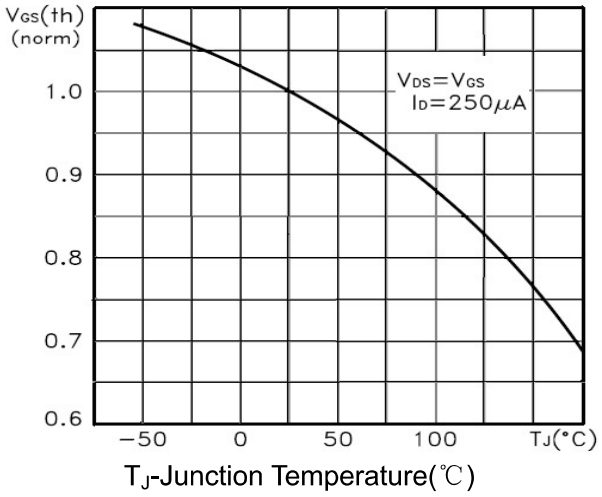


Figure 10 $V_{GS(th)}$ vs Junction Temperature

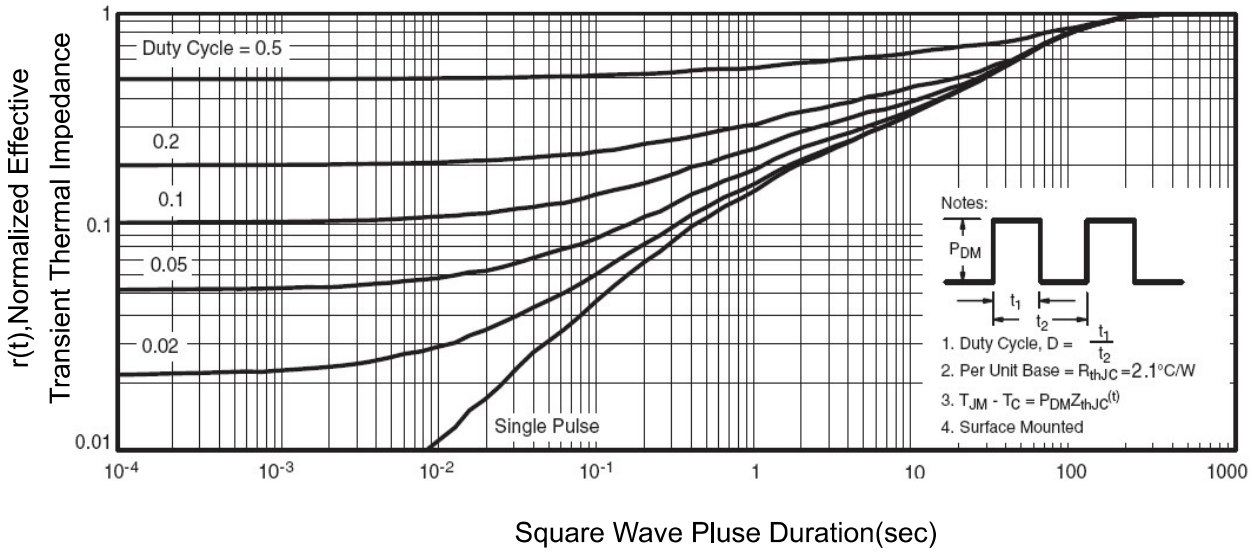
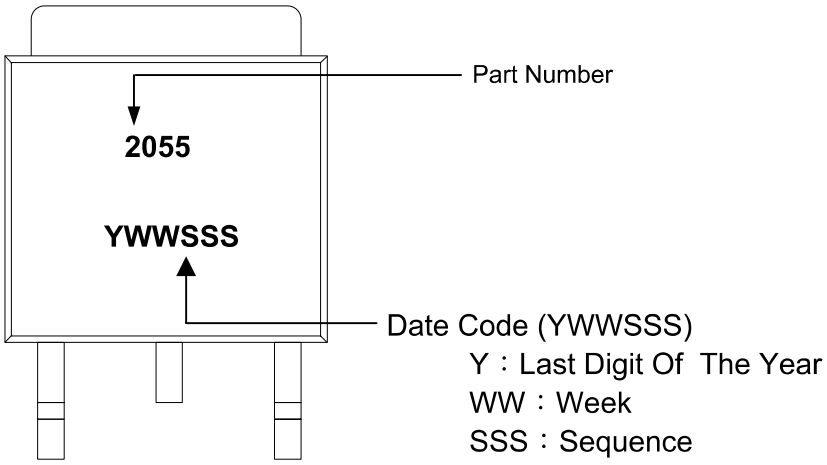
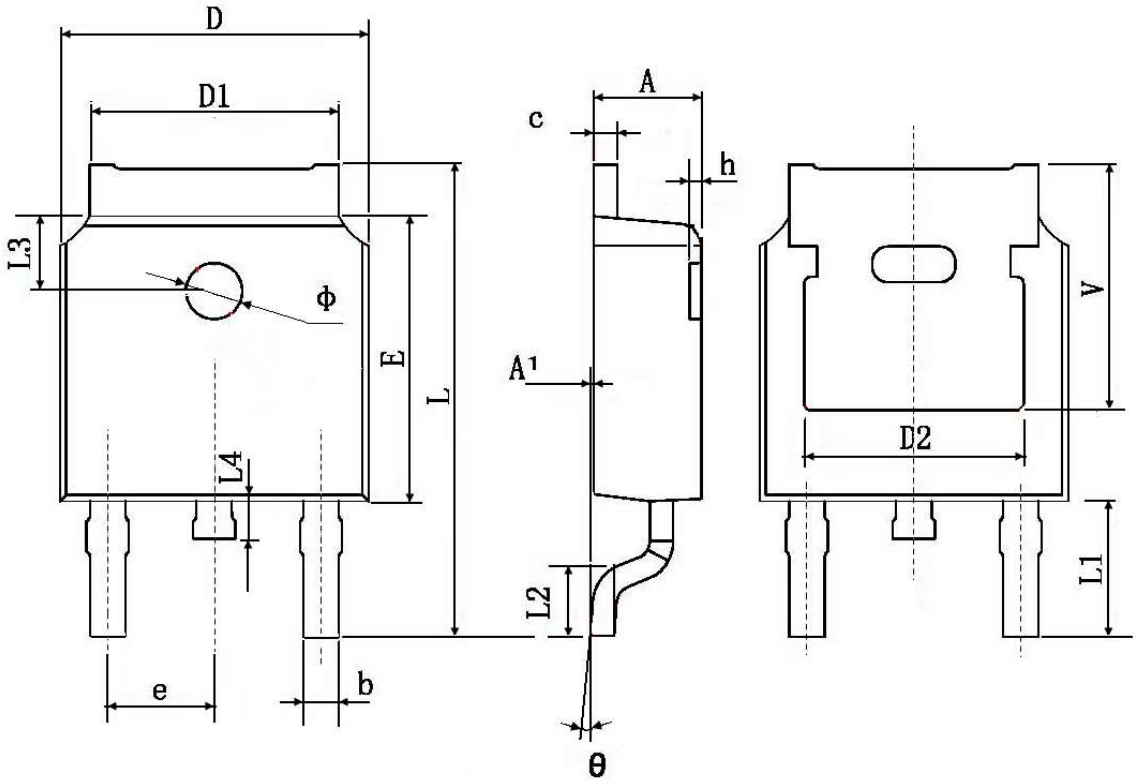


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252


Part Number
2055
YWWSSS
Date Code (YWWSSS)
Y：Last Digit Of The Year
WW：Week
SSS：Sequence

TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	