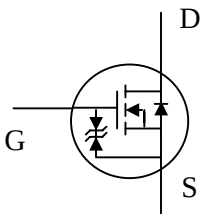
N-channel Enhancement-mode Power MOSFET

Simple Gate Drive

Small Package Outline

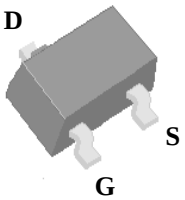
Low Gate Charge

RoHS-compliant, halogen-free



BV_{DSS}	20V
$R_{DS(ON)}$	600mΩ
I_D	600mA

Description



SOT-323

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The AP1332GEU-HF-3 is in the popular SOT-323 small surface-mount package which is widely used in commercial and industrial applications where a small board footprint is required.
This device is well suited for use in applications such as load switches.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D at T_A =25°C	Continuous Drain Current [3]	0.6	A
I_D at T_A= 70°C	Continuous Drain Current[3]	0.47	A
I_{DM}	Pulsed Drain Current[1]	2.5	A
P_D at T_A=25°C	Total Power Dissipation	0.35	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	360	°C/W

Ordering Information

AP1332GEU-HF-3TR RoHS-compliant halogen-free SOT-323, shipped on tape and reel, 3000pcs/reel

Electrical Specifications at T_j=25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I_D=1mA	-	0.02	-	V/°C
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=600mA	-	-	600	mΩ
		V_{GS}=2.5V, I_D=400mA	-	-	1000	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.5	-	1.25	V
g_{fs}	Forward Transconductance	V_{DS}=5V, I_D=600mA	-	1	-	S
I_{DSS}	Drain-Source Leakage Current (T_j=25°C)	V_{DS}=20V, V_{GS}=0V	-	-	1	uA
	Drain-Source Leakage Current (T_j=70°C)	V_{DS}=16V ,V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=±8V	-	-	±30	uA
Q_g	Total Gate Charge[2]	I_D=600mA	-	1.3	2	nC
Q_{gs}	Gate-Source Charge	V_{DS}=16V	-	0.3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	0.5	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	21	-	ns
t_r	Rise Time	I_D=600mA	-	53	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω , V_{GS}=5V	-	100	-	ns
t_f	Fall Time	R_D=16.7Ω	-	125	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	38	60	pF
C_{oss}	Output Capacitance	V_{DS}=10V	-	17	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	12	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Forward On Voltage[2]	I_S=300mA, V_{GS}=0V	-	-	1.2	V

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test - pulse width ≤ 300μs , duty cycle ≤ 2%
3. Surface mounted on FR4 board, t ≤10 sec.

Typical Electrical Characteristics

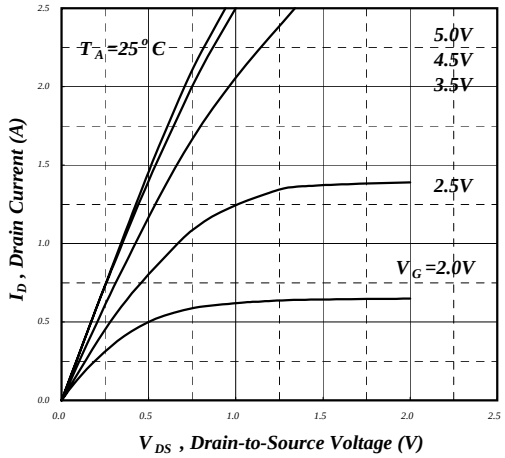


Fig 1. Typical Output Characteristics

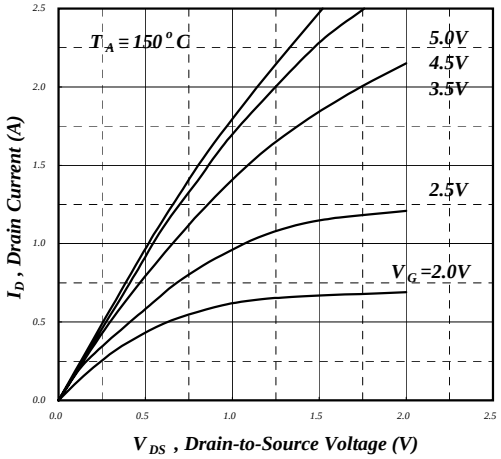


Fig 2. Typical Output Characteristics

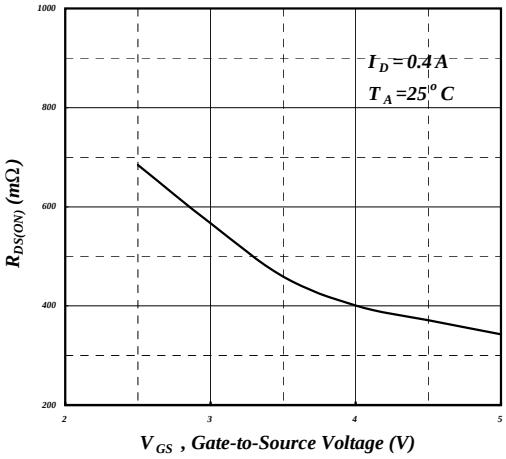


Fig 3. On-Resistance vs. Gate Voltage

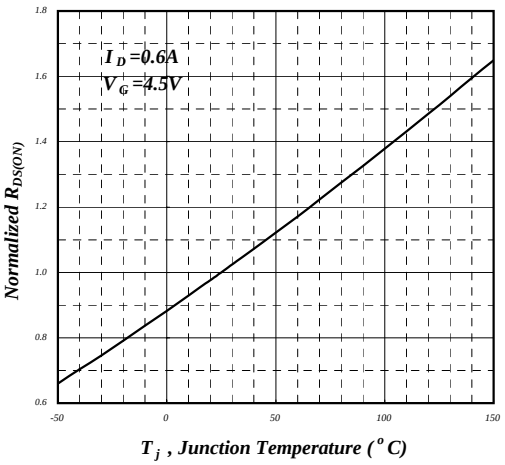


Fig 4. Normalized On-Resistance vs. Junction Temperature

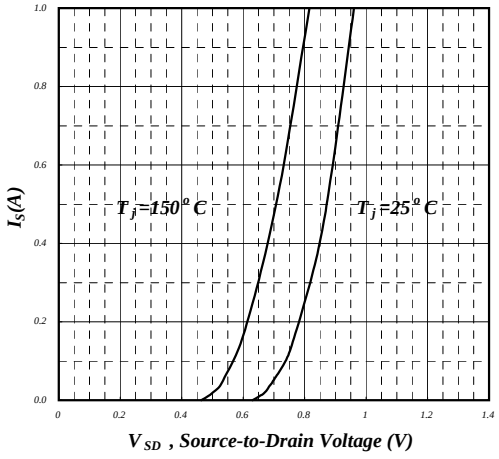


Fig 5. Forward Characteristic of Reverse Diode

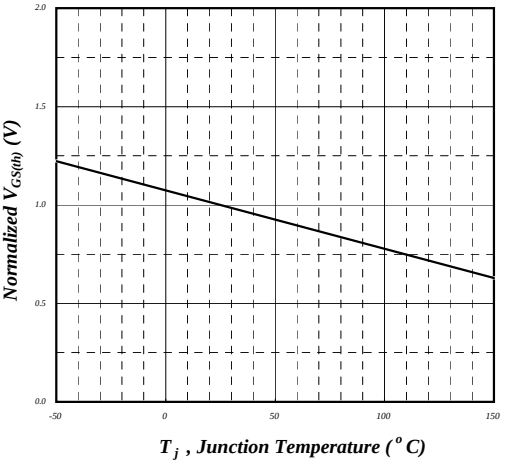


Fig 6. Gate Threshold Voltage vs. Junction Temperature

Typical Electrical Characteristics (cont.)

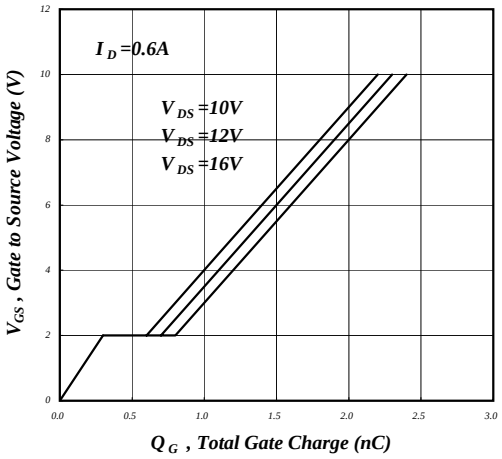


Fig 7. Gate Charge Characteristics

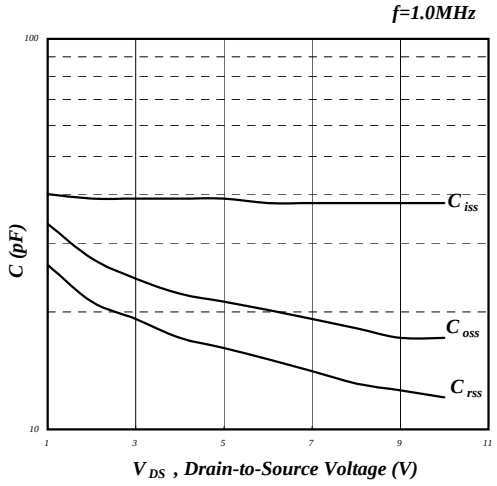


Fig 8. Typical Capacitance Characteristics

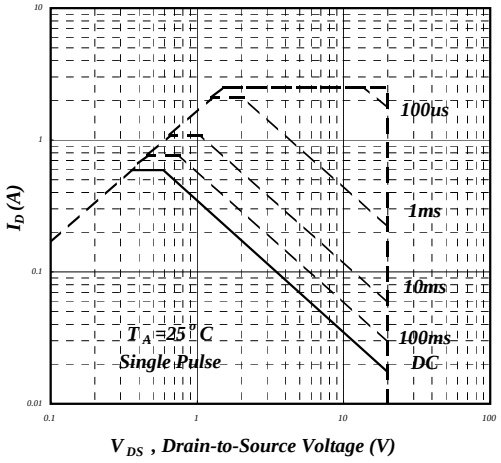


Fig 9. Maximum Safe Operating Area

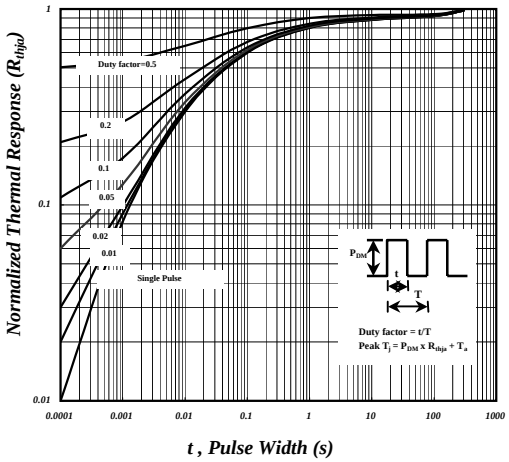


Fig 10. Effective Transient Thermal Impedance

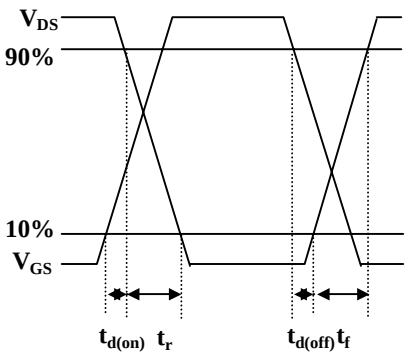


Fig 11. Switching Time Waveform

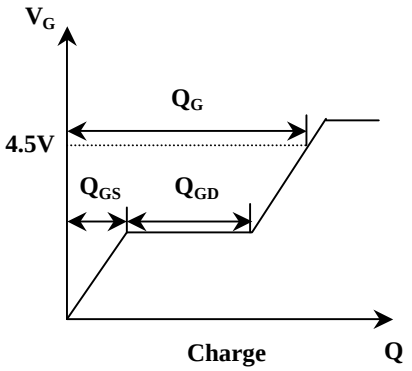
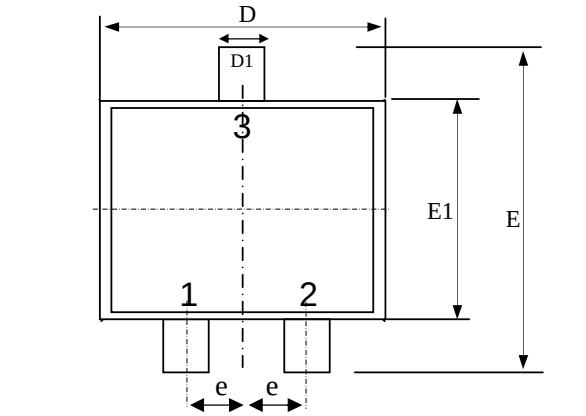
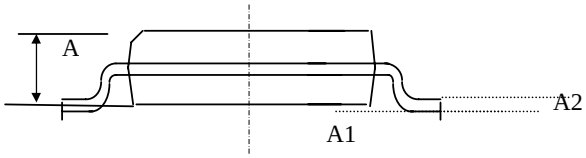


Fig 12. Gate Charge Waveform

Package Dimensions: SOT-323

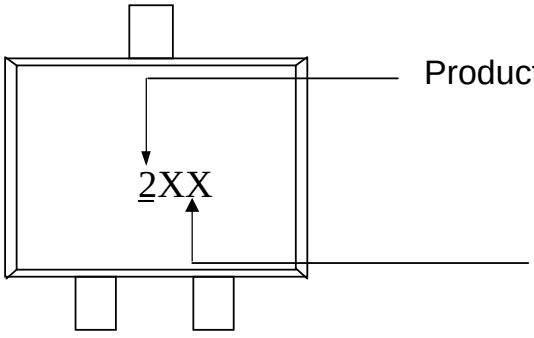


	Millimeters		
SYMBOLS	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.05	0.10
A2		0.15	
D1	0.25	0.33	0.40
e		0.65	
D	1.80	2.00	2.20
E	1.80	2.10	2.40
E1	1.15	1.25	1.35



1. All Dimensions are in millimeters.
2. Dimensions do not include mold protrusions.

Marking Information: SOT-323



Product: 2 = AP1332GEU-HF-3

Date/lot code

For details of how to convert this to standard YYWW date code format, please contact us directly.