



**Advanced Power
Electronics Corp.**

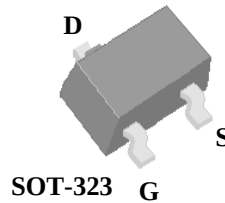
AP1332GEU

Pb Free Plating Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

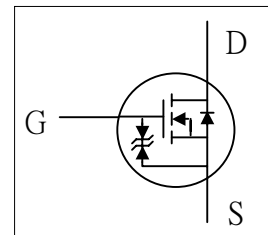
- ▼ Simple Gate Drive
- ▼ Small Package Outline
- ▼ 2KV ESD Rating(Per MIL-STD-883D)
- ▼ RoHS Compliant



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

Description

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



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 6	V
$I_D@T_A=25^{\circ}\text{C}$	Continuous Drain Current ³	600	mA
$I_D@T_A=70^{\circ}\text{C}$	Continuous Drain Current ³	470	mA
I_{DM}	Pulsed Drain Current ^{1,2}	2.5	A
$P_D@T_A=25^{\circ}\text{C}$	Total Power Dissipation	0.35	W
	Linear Derating Factor	0.003	W/ $^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient ³ Max.	360	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics@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	V _{GS} =4.5V, I _D =600mA	-	-	600	mΩ
		V _{GS} =2.5V, I _D =400mA	-	-	850	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5	-	1.2	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} =±6V	-	-	±10	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 Max. junction temperature.
- 2.Pulse width ≤300us , duty cycle ≤2%.
- 3.Surface mounted on FR4 board, t ≤ 10 sec.

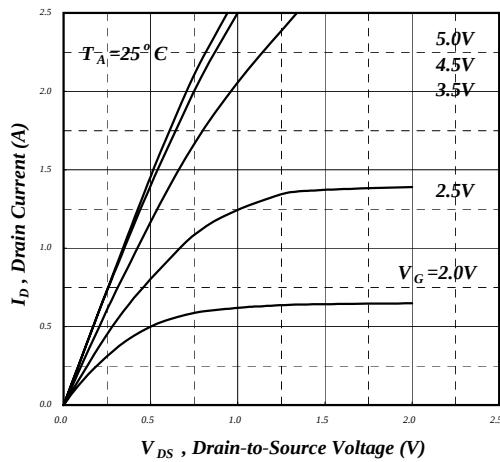


Fig 1. Typical Output Characteristics

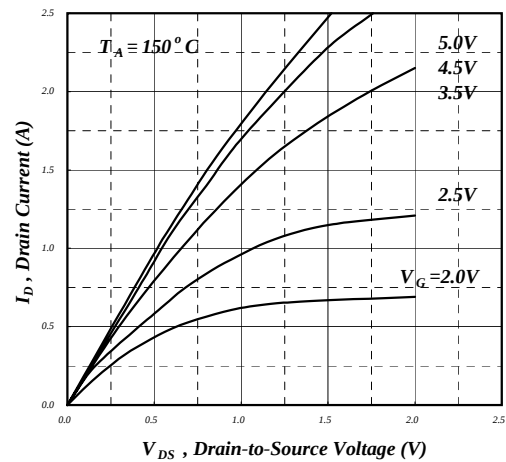


Fig 2. Typical Output Characteristics

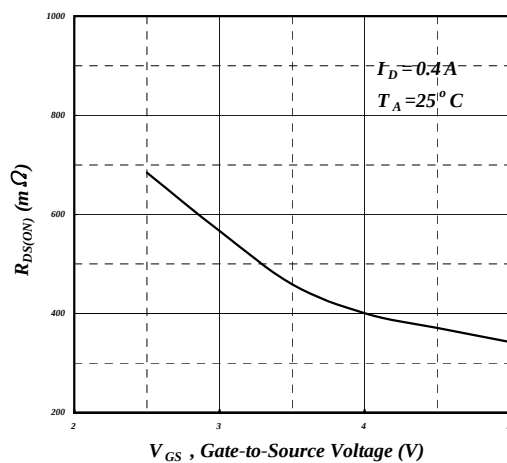


Fig 3. On-Resistance v.s. Gate Voltage

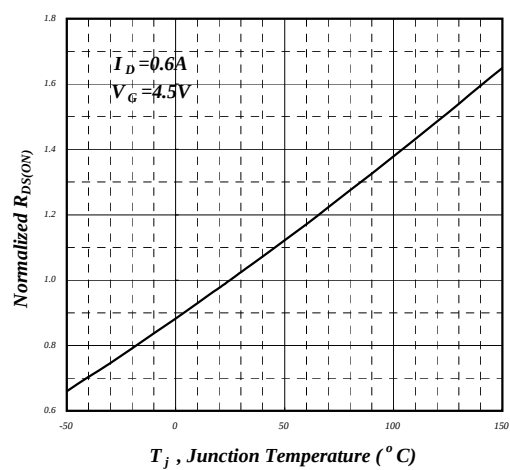


Fig 4. Normalized On-Resistance v.s. Junction Temperature

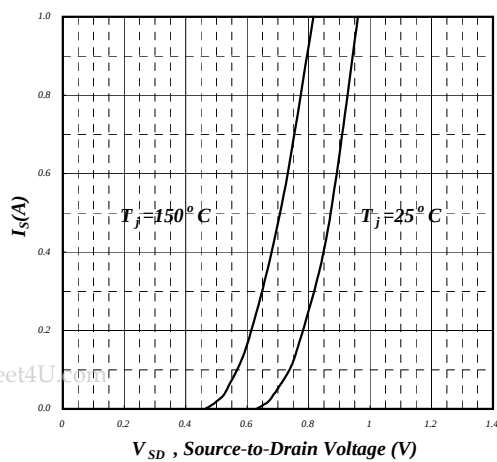


Fig 5. Forward Characteristic of Reverse Diode

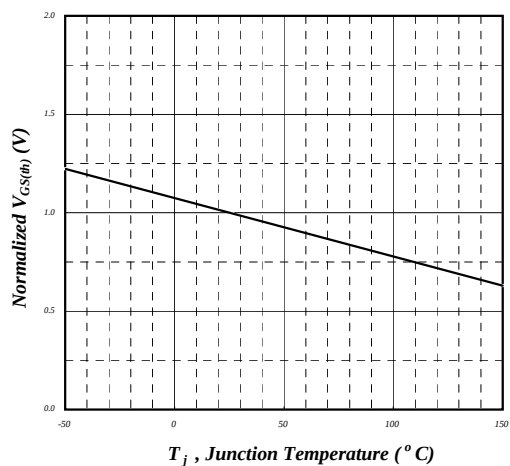


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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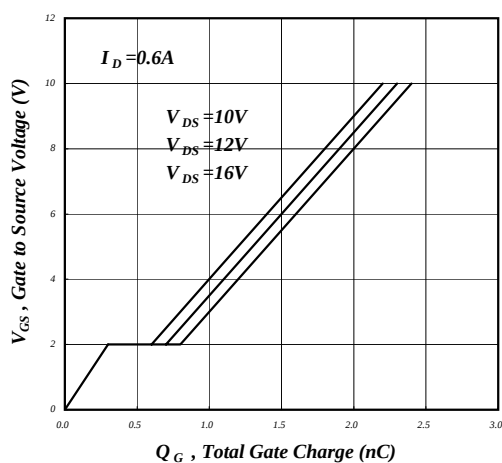


Fig 7. Gate Charge Characteristics

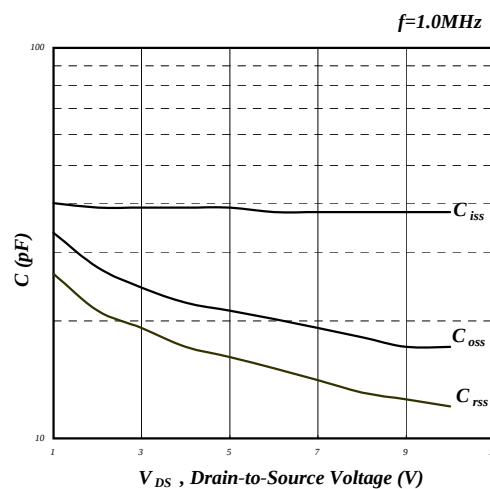


Fig 8. Typical Capacitance Characteristics

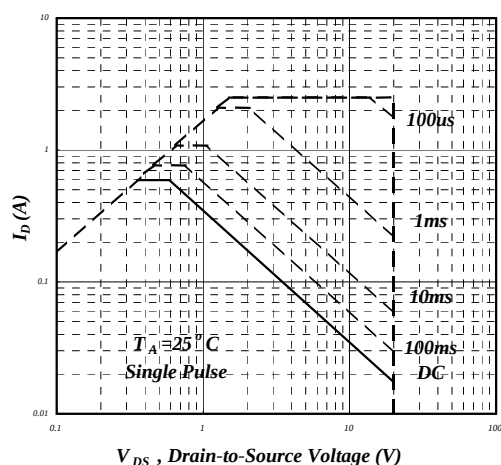


Fig 9. Maximum Safe Operating Area

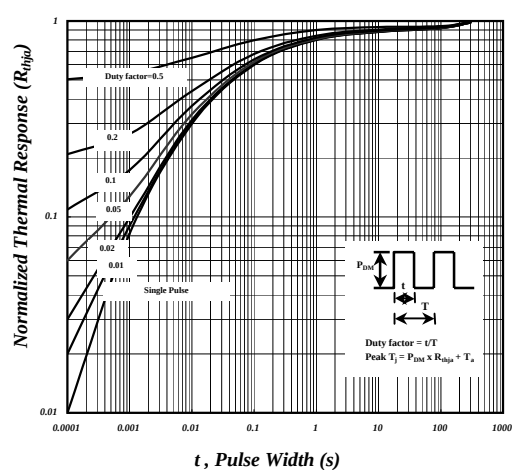


Fig 10. Effective Transient Thermal Impedance

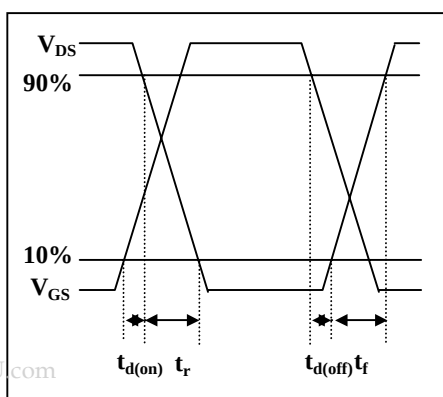


Fig 11. Switching Time Waveform

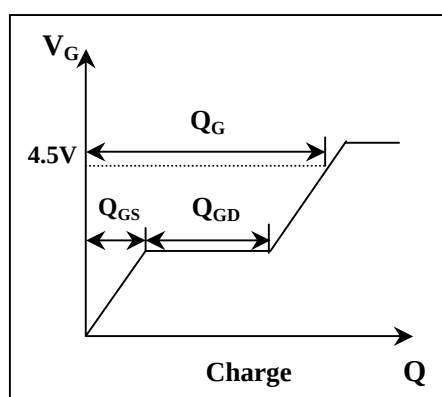


Fig 12. Gate Charge Waveform