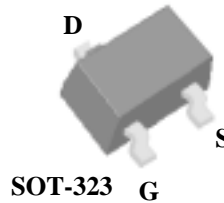


AP1333GU

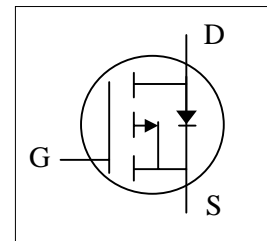
- ▼ Simple Gate Drive
- ▼ Small Package Outline
- ▼ Fast Switching Speed
- ▼ RoHS Compliant



BV_{DSS}	-20V
$R_{DS(ON)}$	800mΩ
I_D	-550mA

Description

The Advanced Power MOSFETs from TY 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	±12	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current ³	-550	mA
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current ³	-440	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/°C
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
R_{thj-a}	Thermal Resistance Junction-ambient ³	Max. 360	°C/W

Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	-	0.01	-	$\text{V}/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-550\text{mA}$	-	-	600	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-500\text{mA}$	-	-	800	$\text{m}\Omega$
		$V_{GS}=-2.5V, I_D=-300\text{mA}$	-	-	1000	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-	-1.2	V
g_{fs}	Forward Transconductance	$V_{DS}=-5V, I_D=-500\text{mA}$	-	1	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^{\circ}\text{C}$)	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
	Drain-Source Leakage Current ($T_j=70^{\circ}\text{C}$)	$V_{DS}=-16V, V_{GS}=0V$	-	-	-10	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 12V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=-500\text{mA}$	-	1.7	2.7	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-16V$	-	0.3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	0.4	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=-10V$	-	5	-	ns
t_r	Rise Time	$I_D=-500\text{mA}$	-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=-5V$	-	10	-	ns
t_f	Fall Time	$R_D=20\Omega$	-	2	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	66	105.6	pF
C_{oss}	Output Capacitance	$V_{DS}=-10V$	-	25	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	20	-	pF

Source-Drain Diode

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

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on FR4 board, $t \leq 10$ sec.