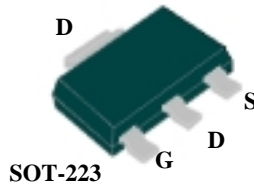




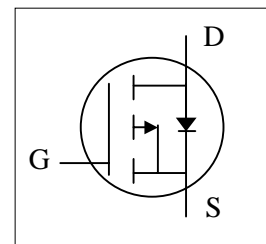
- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ Fast Switching



BV_{DSS}	-30V
$R_{DS(ON)}$	50m Ω
I_D	-6A

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	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D @ T_A=25^\circ C$	Continuous Drain Current ³	-6	A
$I_D @ T_A=70^\circ C$	Continuous Drain Current ³	-4.8	A
I_{DM}	Pulsed Drain Current ¹	-20	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	2.7	W
	Linear Derating Factor	0.02	W/ $^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-amb	Thermal Resistance Junction-ambient ³	Max. 45	$^\circ C/W$


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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	-	-0.02	-	$V/^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-5.3A$	-	-	50	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-4.2A$	-	-	100	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3	V
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-5.3A$	-	10	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^\circ\text{C}$)	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
	Drain-Source Leakage Current ($T_j=70^\circ\text{C}$)	$V_{DS}=-24V, V_{GS}=0V$	-	-	-25	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 25V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=-5.3A$	-	9.2	16	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-24V$	-	2.8	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	5.2	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=-15V$	-	11	-	ns
t_r	Rise Time	$I_D=-1A$	-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=6\Omega, V_{GS}=-10V$	-	25	-	ns
t_f	Fall Time	$R_D=15\Omega$	-	17	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	507	912	pF
C_{oss}	Output Capacitance	$V_{DS}=-15V$	-	222	-	pF
C_{riss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	158	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=-2.3A, V_{GS}=0V$	-	-	-1.2	V
t_{rr}	Reverse Recovery Time	$I_S=-5.3A, V_{GS}=0V,$	-	29	-	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s$	-	20	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 120°C/W when mounted on Min. copper pad.

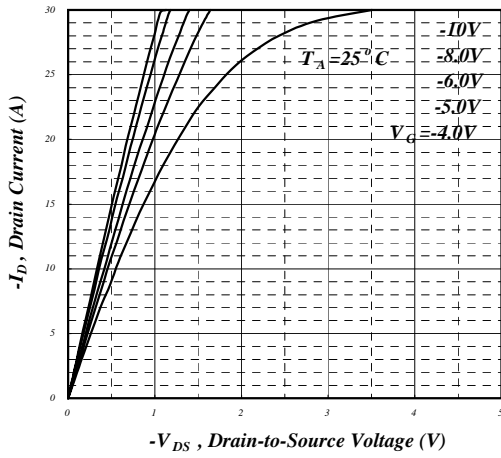


Fig 1. Typical Output Characteristics

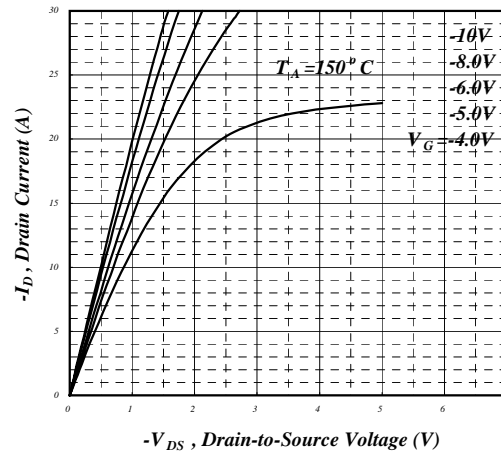


Fig 2. Typical Output Characteristics

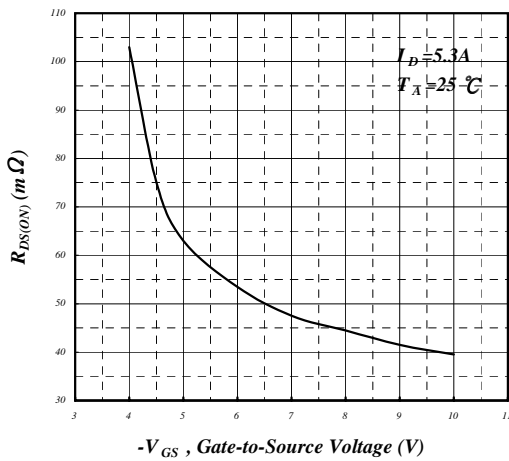


Fig 3. On-Resistance v.s. Gate Voltage

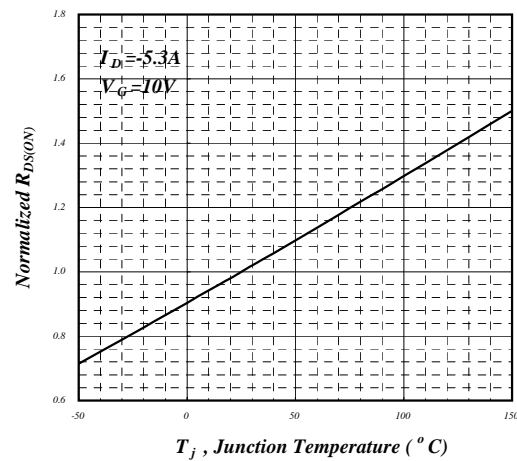


Fig 4. Normalized On-Resistance v.s. Junction Temperature

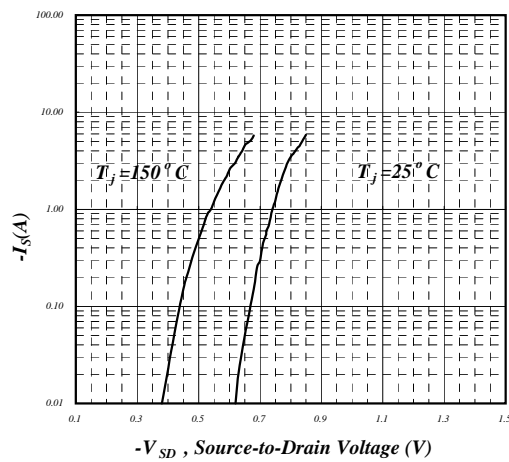


Fig 5. Forward Characteristic of Reverse Diode

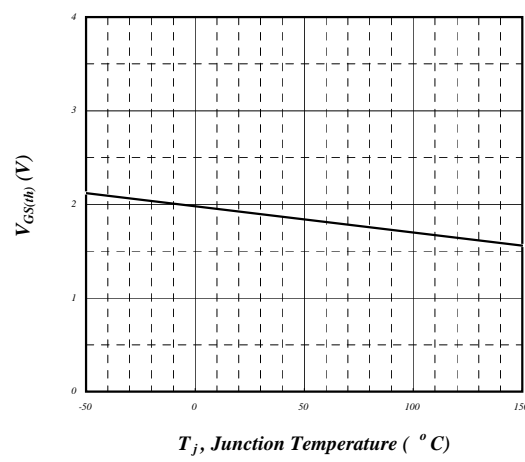


Fig 6. Gate Threshold Voltage v.s. Junction Temperature