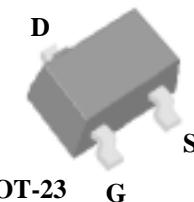




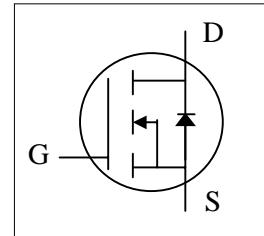
- ▼ Capable of 2.5V gate drive
- ▼ Small package outline
- ▼ Surface mount package



BV_{DSS}	20V
$R_{DS(ON)}$	85mΩ
I_D	3.2A

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	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current ³ , $V_{GS} @ 4.5V$	3.2	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current ³ , $V_{GS} @ 4.5V$	2.6	A
I_{DM}	Pulsed Drain Current ^{1,2}	10	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation	1.38	W
	Linear Derating Factor	0.01	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.	90 °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	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	20	-	-	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_{\text{D}}=1\text{mA}$	-	0.1	-	$\text{V}/^\circ\text{C}$
$R_{\text{DS}(\text{ON})}$	Static Drain-Source On-Resistance ²	$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=3.6\text{A}$	-	-	85	$\text{m}\Omega$
		$V_{\text{GS}}=2.5\text{V}, I_{\text{D}}=3.1\text{A}$	-	-	115	$\text{m}\Omega$
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	0.5	-	1.2	V
g_{fs}	Forward Transconductance	$V_{\text{DS}}=5\text{V}, I_{\text{D}}=3.6\text{A}$	-	6	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^\circ\text{C}$)	$V_{\text{DS}}=20\text{V}, V_{\text{GS}}=0\text{V}$	-	-	1	μA
	Drain-Source Leakage Current ($T_j=70^\circ\text{C}$)	$V_{\text{DS}}=20\text{V}, V_{\text{GS}}=0\text{V}$	-	-	10	μA
I_{GSS}	Gate-Source Leakage	$V_{\text{GS}}=\pm 12\text{V}$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_{\text{D}}=3.6\text{A}$	-	4.4	-	nC
Q_{gs}	Gate-Source Charge		-	0.6	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge		-	1.9	-	nC
$t_{\text{d}(\text{on})}$	Turn-on Delay Time ²	$V_{\text{DS}}=10\text{V}$	-	5.2	-	ns
t_r	Rise Time	$I_{\text{D}}=3.6\text{A}$	-	37	-	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time	$R_G=6\Omega, V_{\text{GS}}=5\text{V}$	-	15	-	ns
t_f	Fall Time	$R_D=2.8\Omega$	-	5.7	-	ns
C_{iss}	Input Capacitance	$V_{\text{GS}}=0\text{V}$	-	145	-	pF
C_{oss}	Output Capacitance	$V_{\text{DS}}=10\text{V}$	-	100	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	50	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
I_S	Continuous Source Current (Body Diode)	$V_D=V_G=0\text{V}, V_S=1.2\text{V}$	-	-	1	A
I_{SM}	Pulsed Source Current (Body Diode) ¹		-	-	10	A
V_{SD}	Forward On Voltage ²	$I_S=1.6\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.2	V

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width $\leq 300\text{us}$, duty cycle $\leq 2\%$.
- 3.Surface mounted on 1 in² copper pad of FR4 board ; $270^\circ\text{C}/\text{W}$ when mounted on min. copper pad.

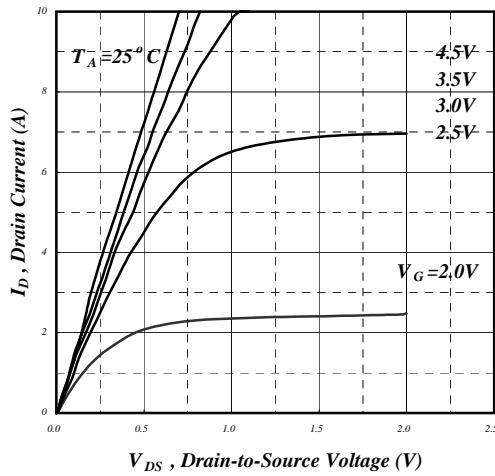


Fig 1. Typical Output Characteristics

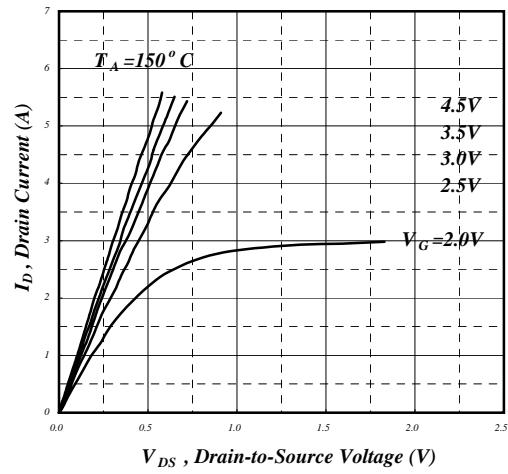


Fig 2. Typical Output Characteristics

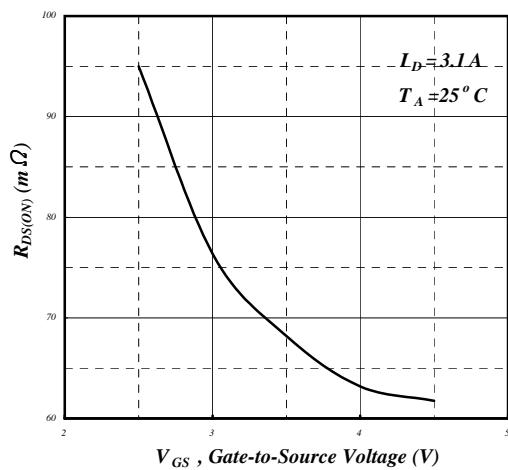


Fig 3. On-Resistance v.s. Gate Voltage

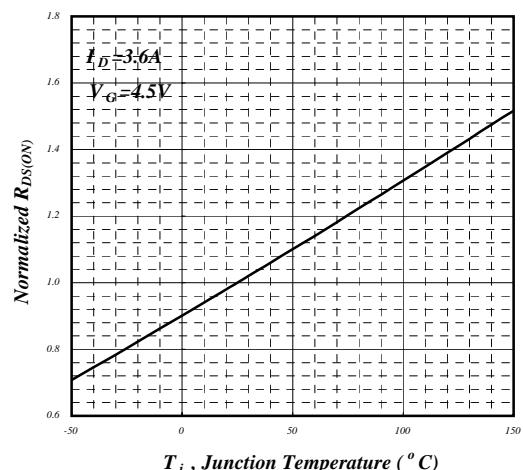


Fig 4. Normalized On-Resistance

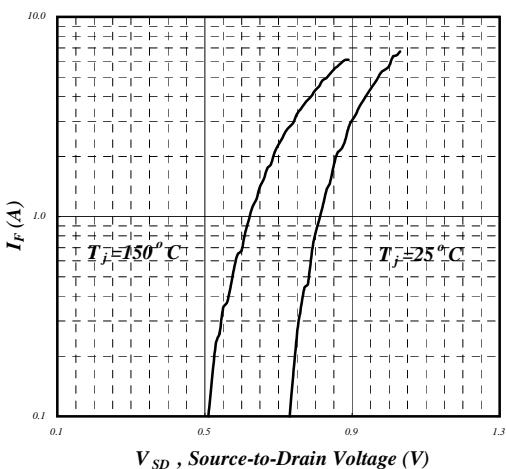


Fig 5. Forward Characteristic of Reverse Diode

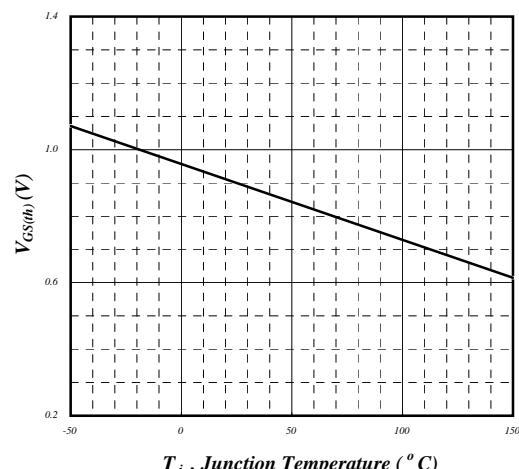


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

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