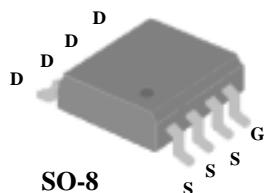


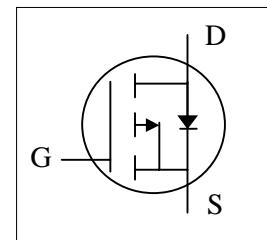

▼ Simple Drive Requirement
▼ Low On-resistance
▼ Fast Switching Characteristic


BV_{DSS}	-40V
$R_{DS(ON)}$	50m Ω
I_D	-6A

Description

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

The SO-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-40	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	-30	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	2.5	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
R_{thj-a}	Thermal Resistance Junction-ambient ³	Max. 50	$^\circ C/W$



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	$V_{\text{GS}}=0\text{V}$, $I_{\text{D}}=-250\mu\text{A}$	-40	-	-	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_{\text{D}}=-1\text{mA}$	-	-0.03	-	$\text{V}/^\circ\text{C}$
$R_{\text{DS}(\text{ON})}$	Static Drain-Source On-Resistance ²	$V_{\text{GS}}=-10\text{V}$, $I_{\text{D}}=-6\text{A}$	-	-	50	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}$, $I_{\text{D}}=-4\text{A}$	-	-	80	$\text{m}\Omega$
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}$, $I_{\text{D}}=-250\mu\text{A}$	-1	-	-3	V
g_{fs}	Forward Transconductance	$V_{\text{DS}}=-10\text{V}$, $I_{\text{D}}=-6\text{A}$	-	9	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^\circ\text{C}$)	$V_{\text{DS}}=-40\text{V}$, $V_{\text{GS}}=0\text{V}$	-	-	-1	μA
	Drain-Source Leakage Current ($T_j=70^\circ\text{C}$)	$V_{\text{DS}}=-32\text{V}$, $V_{\text{GS}}=0\text{V}$	-	-	-25	μA
I_{GSS}	Gate-Source Leakage	$V_{\text{GS}}=\pm 25\text{V}$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_{\text{D}}=-6\text{A}$	-	11	18	nC
Q_{gs}	Gate-Source Charge	$V_{\text{DS}}=-32\text{V}$	-	3	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{\text{GS}}=-4.5\text{V}$	-	5	-	nC
$t_{\text{d}(\text{on})}$	Turn-on Delay Time ²	$V_{\text{DS}}=-20\text{V}$	-	10	-	ns
t_r	Rise Time	$I_{\text{D}}=-1\text{A}$	-	5	-	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time	$R_G=3.3\Omega$, $V_{\text{GS}}=-10\text{V}$	-	30	-	ns
t_f	Fall Time	$R_D=20\Omega$	-	6	-	ns
C_{iss}	Input Capacitance	$V_{\text{GS}}=0\text{V}$	-	880	1400	pF
C_{oss}	Output Capacitance	$V_{\text{DS}}=-25\text{V}$	-	135	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	110	-	pF
R_g	Gate Resistance	f=1.0MHz	-	5	8	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_{\text{S}}=-2\text{A}$, $V_{\text{GS}}=0\text{V}$	-	-	-1.2	V
t_{rr}	Reverse Recovery Time ²	$I_{\text{S}}=-6\text{A}$, $V_{\text{GS}}=0\text{V}$,	-	24	-	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100\text{A}/\mu\text{s}$	-	21	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3.Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; $125^\circ\text{C}/\text{W}$ when mounted on Min. copper pad.

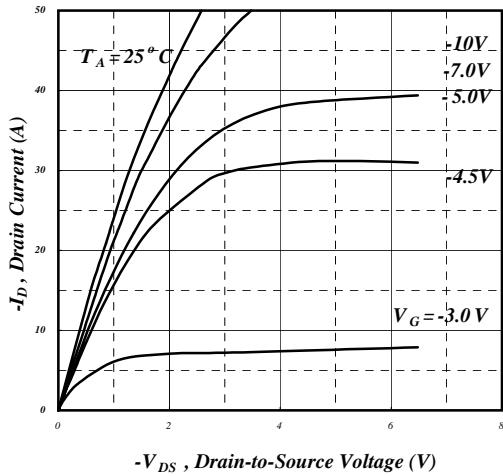


Fig 1. Typical Output Characteristics

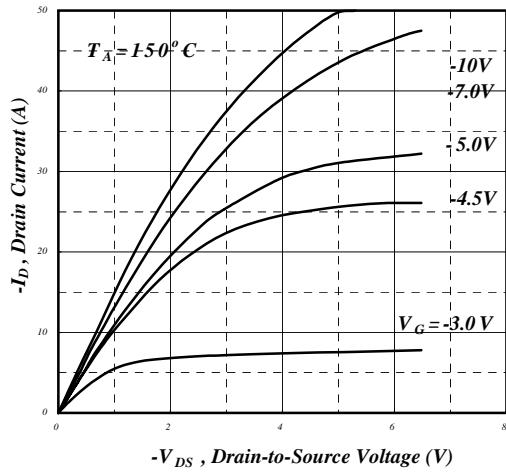


Fig 2. Typical Output Characteristics

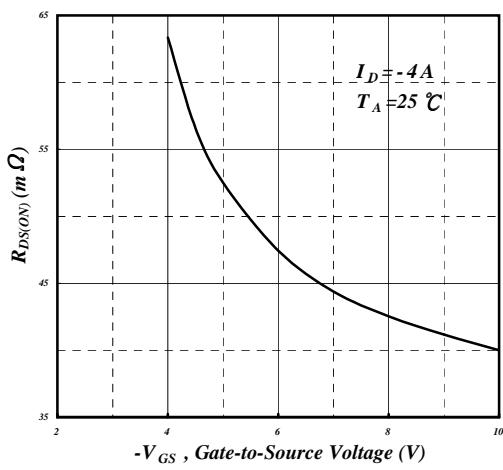


Fig 3. On-Resistance v.s. Gate Voltage

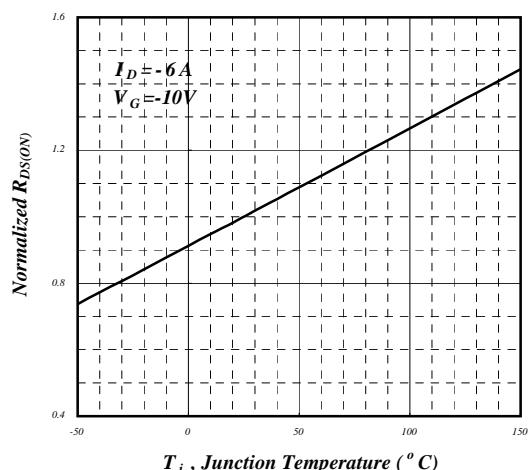


Fig 4. Normalized On-Resistance v.s. Junction Temperature

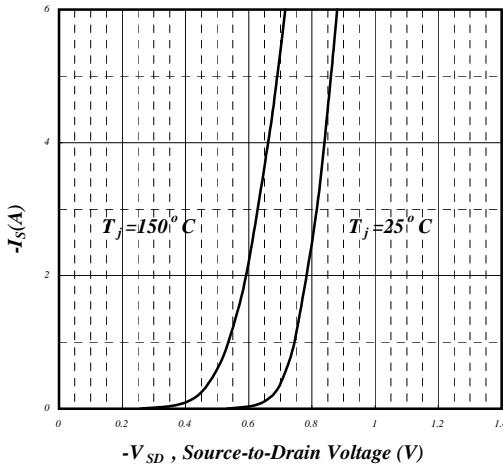


Fig 5. Forward Characteristic of Reverse Diode

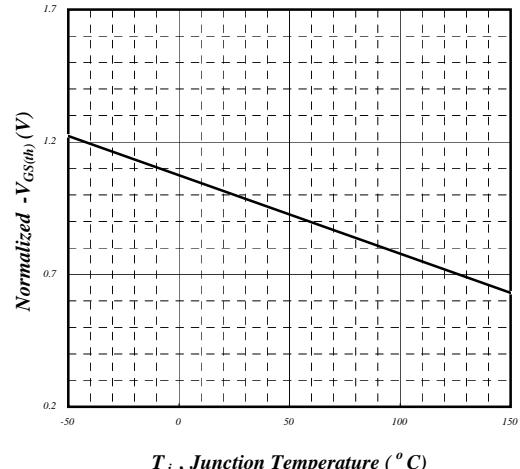


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

