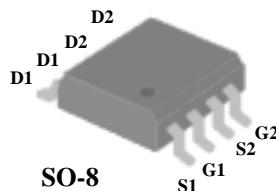




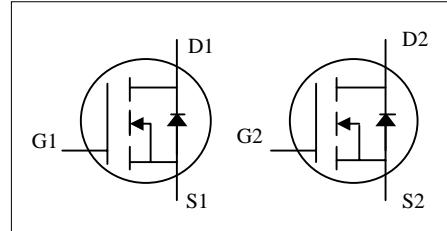
- ▼ Low On-Resistance
- ▼ Simple Drive Requirement
- ▼ Dual N MOSFET Package



$BV_{DSS}$	30V
$R_{DS(ON)}$	14mΩ
$I_D$	10A

## Description

The Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, ultra 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	$\pm 20$	V
$I_D @ T_A=25^\circ C$	Continuous Drain Current <sup>3</sup>	10	A
$I_D @ T_A=70^\circ C$	Continuous Drain Current <sup>3</sup>	8	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	30	A
$P_D @ T_A=25^\circ C$	Total Power Dissipation	2	W
	Linear Derating Factor	0.016	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 <sup>3</sup>	Max.	62.5 °C/W



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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$\text{BV}_{\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}$ , $I_D=250\mu\text{A}$	30	-	-	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to $25^\circ\text{C}$ , $I_D=1\text{mA}$	-	0.03	-	$\text{V}/^\circ\text{C}$
$R_{\text{DS(ON)}}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{\text{GS}}=10\text{V}$ , $I_D=10\text{A}$	-	-	14	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}$ , $I_D=7\text{A}$	-	-	20	$\text{m}\Omega$
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}$ , $I_D=250\mu\text{A}$	1	-	3	V
$g_{\text{fs}}$	Forward Transconductance	$V_{\text{DS}}=10\text{V}$ , $I_D=10\text{A}$	-	16	-	S
$I_{\text{DSS}}$	Drain-Source Leakage Current ( $T_j=25^\circ\text{C}$ )	$V_{\text{DS}}=30\text{V}$ , $V_{\text{GS}}=0\text{V}$	-	-	1	$\text{uA}$
	Drain-Source Leakage Current ( $T_j=70^\circ\text{C}$ )	$V_{\text{DS}}=24\text{V}$ , $V_{\text{GS}}=0\text{V}$	-	-	25	$\text{uA}$
$I_{\text{GSS}}$	Gate-Source Leakage	$V_{\text{GS}}=\pm 20\text{V}$	-	-	$\pm 100$	nA
$Q_g$	Total Gate Charge <sup>2</sup>	$I_D=10\text{A}$	-	23	35	nC
$Q_{\text{gs}}$	Gate-Source Charge		-	6	-	nC
$Q_{\text{gd}}$	Gate-Drain ("Miller") Charge		-	14	-	nC
$t_{\text{d(on)}}$	Turn-on Delay Time <sup>2</sup>	$V_{\text{DS}}=15\text{V}$	-	12	-	ns
$t_r$	Rise Time	$I_D=1\text{A}$	-	8	-	ns
$t_{\text{d(off)}}$	Turn-off Delay Time		-	34	-	ns
$t_f$	Fall Time		-	16	-	ns
$C_{\text{iss}}$	Input Capacitance	$V_{\text{GS}}=0\text{V}$	-	1910	3070	pF
$C_{\text{oss}}$	Output Capacitance		-	400	-	pF
$C_{\text{rss}}$	Reverse Transfer Capacitance		-	280	-	pF
$R_g$	Gate Resistance	$f=1.0\text{MHz}$	-	0.9	-	$\Omega$

## Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{\text{SD}}$	Forward On Voltage <sup>2</sup>	$I_S=1.7\text{A}$ , $V_{\text{GS}}=0\text{V}$	-	-	1.2	V
$t_{\text{rr}}$	Reverse Recovery Time <sup>2</sup>	$I_S=10\text{A}$ , $V_{\text{GS}}=0\text{V}$ ,	-	30	-	ns
$Q_{\text{rr}}$	Reverse Recovery Charge	$dI/dt=100\text{A}/\mu\text{s}$	-	24	-	nC

## Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width  $< 300\mu\text{s}$ , duty cycle  $< 2\%$ .
3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board ;  $135\text{ }^\circ\text{C/W}$  when mounted on min. copper pad.

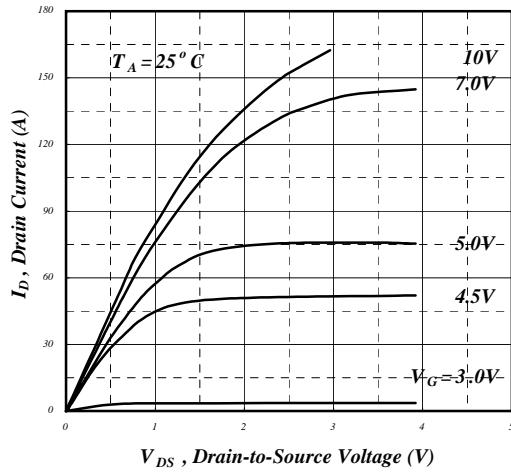


Fig 1. Typical Output Characteristics

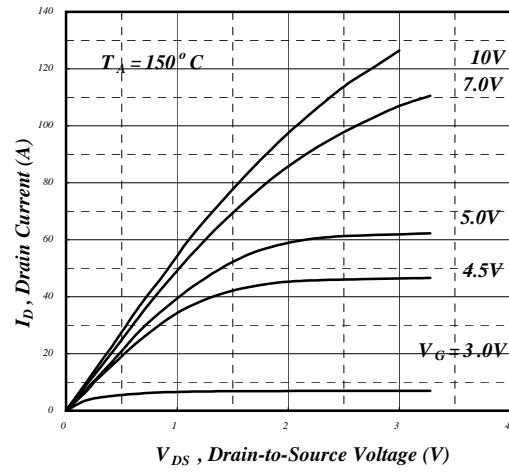


Fig 2. Typical Output Characteristics

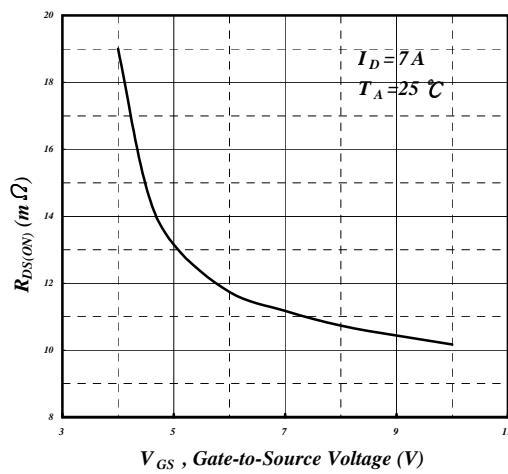


Fig 3. On-Resistance v.s. Gate Voltage

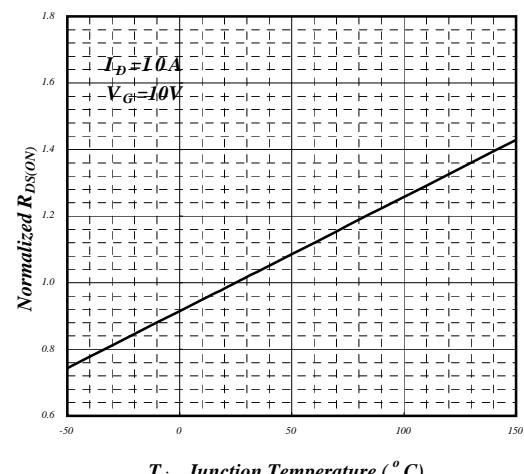


Fig 4. Normalized On-Resistance v.s. Junction Temperature

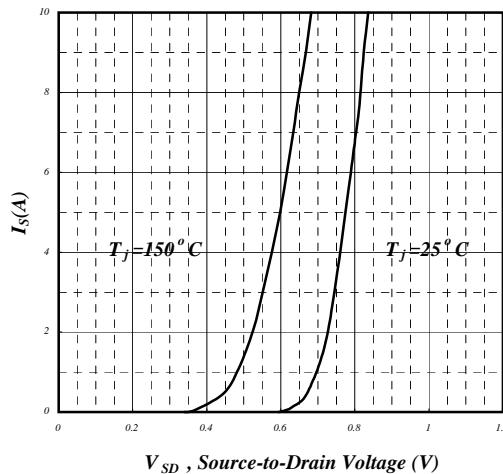


Fig 5. Forward Characteristic of Reverse Diode

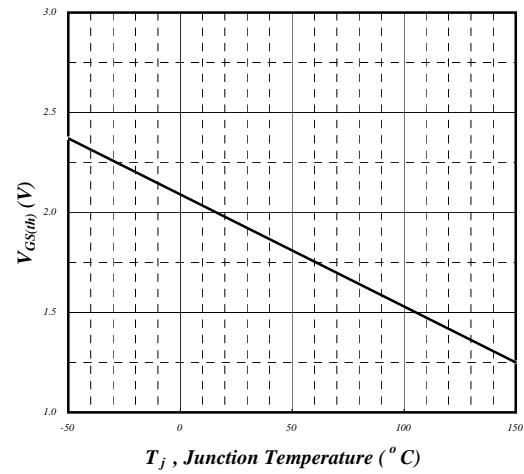


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



## AP4224M

