



- ▼ Simple Drive Requirement
- ▼ SO-8 Compatible with Heatsink
- ▼ Low On-resistance
- ▼ RoHS Compliant & Halogen-Free

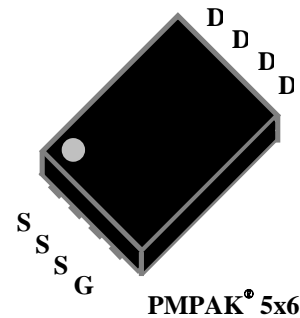


$BV_{DSS}$	30V
$R_{DS(ON)}$	3m $\Omega$
$I_D$	105A

### Description

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 PMPAK<sup>®</sup> 5x6 package is special for DC-DC converters application and the foot print is compatible with SO-8 with backside heat sink and lower profile.



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	+12	V
$I_D@T_C=25^\circ C$	Continuous Drain Current (Chip), $V_{GS}$ @ 10V	105	A
$I_D@T_A=25^\circ C$	Continuous Drain Current <sup>3</sup> , $V_{GS}$ @ 10V	33	A
$I_D@T_A=70^\circ C$	Continuous Drain Current <sup>3</sup> , $V_{GS}$ @ 10V	26.5	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	240	A
$P_D@T_C=25^\circ C$	Total Power Dissipation	50	W
$P_D@T_A=25^\circ C$	Total Power Dissipation	5	W
$E_{AS}$	Single Pulse Avalanche Energy <sup>4</sup>	45	mJ
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ C$

### Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	2.5	$^\circ C/W$
Rthj-a	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	25	$^\circ C/W$



# AP2R803AGMT-HF

## 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
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=20A$	-	-	3	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$	-	-	4.2	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	-	2.5	V
$g_{fs}$	Forward Transconductance	$V_{DS}=10V, I_D=20A$	-	85	-	S
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=24V, V_{GS}=0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	$\pm 100$	nA
$Q_g$	Total Gate Charge <sup>2</sup>	$I_D=20A$	-	28	45	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=15V$	-	5.5	-	nC
$Q_{gd}$	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	13	-	nC
$t_{d(on)}$	Turn-on Delay Time <sup>2</sup>	$V_{DS}=15V$	-	11	-	ns
$t_r$	Rise Time	$I_D=10A$	-	32	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=2\Omega$	-	38	-	ns
$t_f$	Fall Time	$V_{GS}=10V$	-	9	-	ns
$C_{iss}$	Input Capacitance	$V_{GS}=0V$	-	3000	4800	pF
$C_{oss}$	Output Capacitance	$V_{DS}=15V$	-	700	-	pF
$C_{riss}$	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	290	-	pF
$R_g$	Gate Resistance	$f=1.0\text{MHz}$	-	1.4	2.8	$\Omega$

## Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{SD}$	Forward On Voltage <sup>2</sup>	$I_S=20A, V_{GS}=0V$	-	-	1.2	V
$t_{rr}$	Reverse Recovery Time <sup>2</sup>	$I_S=10A, V_{GS}=0V,$	-	40	-	ns
$Q_{rr}$	Reverse Recovery Charge	$dI/dt=100A/\mu s$	-	45	-	nC

### Notes:

1. Pulse width limited by Max. junction temperature
2. Pulse test
3. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board,  $t \leq 10\text{sec}$
4. Starting  $T_j=25^{\circ}\text{C}$ ,  $V_{DD}=25V$ ,  $L=0.1\text{mH}$ ,  $R_G=25\Omega$ ,  $I_{AS}=30A$ .

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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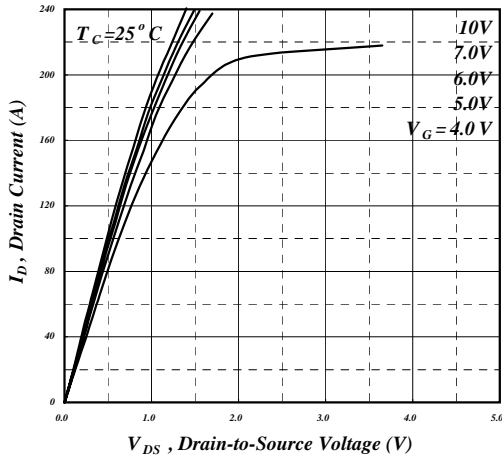


Fig 1. Typical Output Characteristics

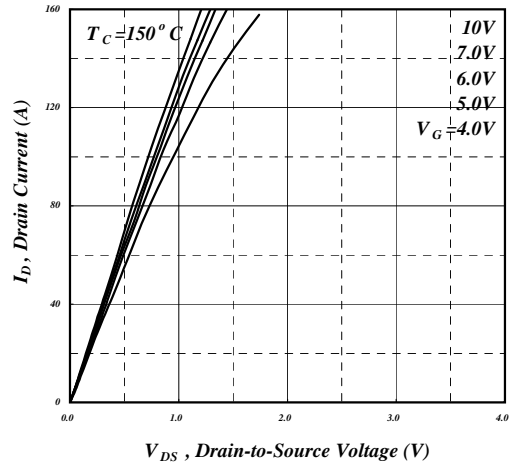


Fig 2. Typical Output Characteristics

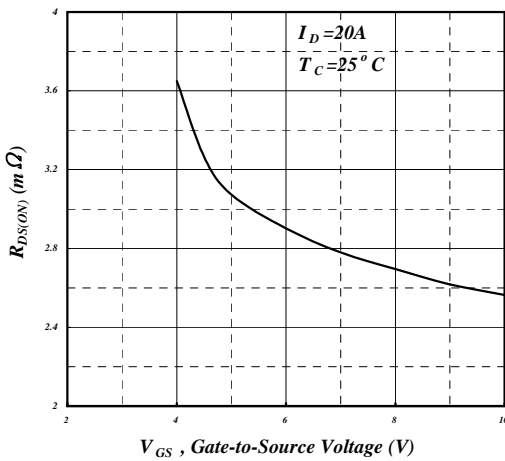


Fig 3. On-Resistance v.s. Gate Voltage

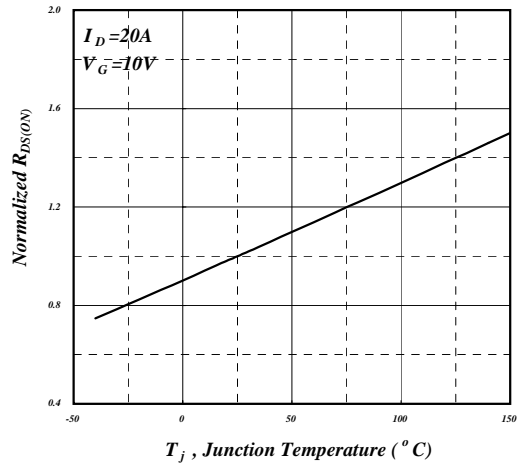


Fig 4. Normalized On-Resistance v.s. Junction Temperature

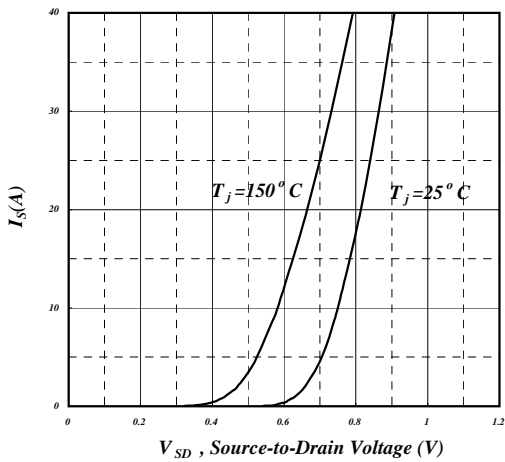


Fig 5. Forward Characteristic of Reverse Diode

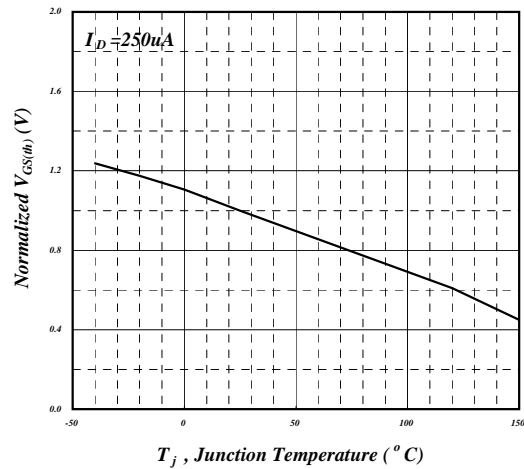


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

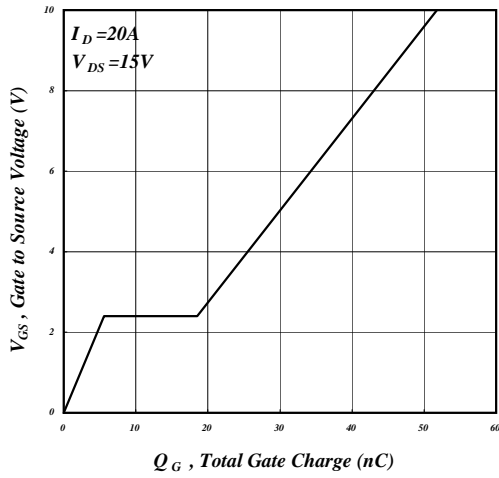


Fig 7. Gate Charge Characteristics

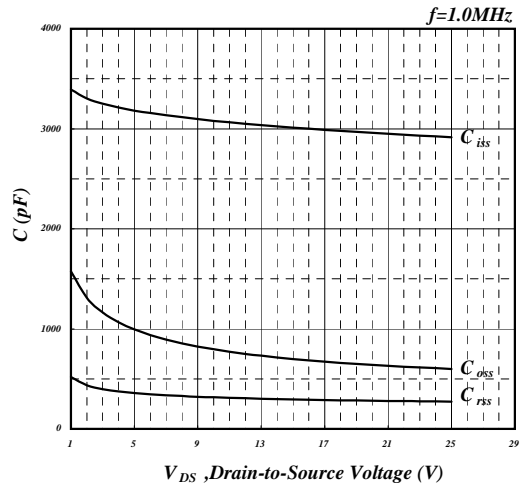


Fig 8. Typical Capacitance Characteristics

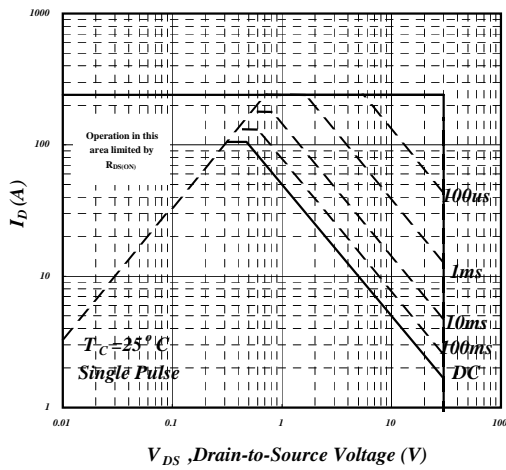


Fig 9. Maximum Safe Operating Area

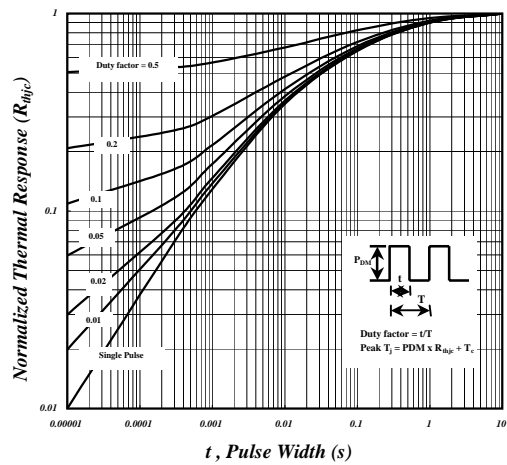


Fig 10. Effective Transient Thermal Impedance

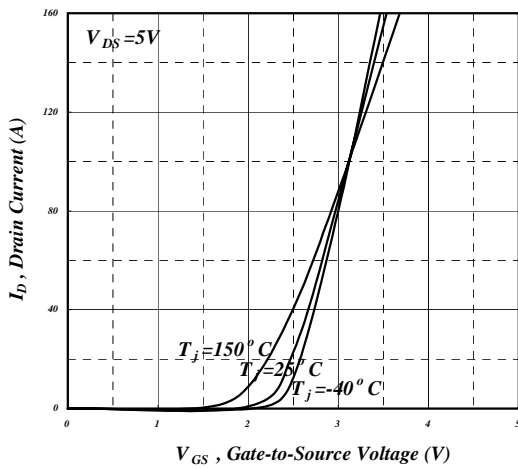


Fig 11. Transfer Characteristics

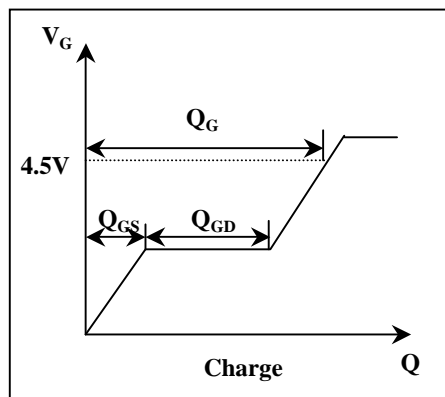


Fig 12. Gate Charge Waveform