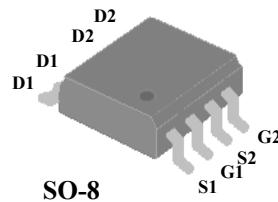


AP3A035EM**Halogen-Free Product****Advanced Power
Electronics Corp.****DUAL N-CHANNEL ENHANCEMENT
MODE POWER MOSFET**

- ▼ Simple Drive Requirement
- ▼ Low Gate Charge
- ▼ Fast Switching Performance
- ▼ RoHS Compliant & Halogen-Free

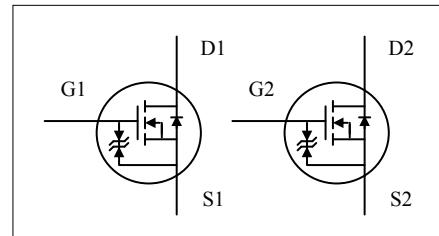


BV_{DSS}	30V
$R_{DS(ON)}$	35mΩ
I_D^3	5.8A

Description

AP3A035E series are from Advanced Power innovative design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The SO-8 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for voltage conversion or switch applications.



Absolute Maximum Ratings@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	+20	V
$I_D @ T_A=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10\text{V}^3$	5.8	A
$I_D @ T_A=70^\circ\text{C}$	Drain Current, $V_{GS} @ 10\text{V}^3$	4.6	A
I_{DM}	Pulsed Drain Current ¹	20	A
$P_D @ T_A=25^\circ\text{C}$	Total Power Dissipation	2	W
E_{AS}	Single Pulse Avalanche Energy ⁴	1.8	mJ
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}	Maximum Thermal Resistance, Junction-ambient ³	62.5	°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	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	30	-	-	V
$R_{\text{DS}(\text{ON})}$	Static Drain-Source On-Resistance ²	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=6\text{A}$	-	-	35	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=3\text{A}$	-	-	50	$\text{m}\Omega$
$V_{\text{GS}(\text{th})}$	Gate Threshold Voltage	$V_{\text{DS}}=V_{\text{GS}}, I_{\text{D}}=250\mu\text{A}$	1.3	-	2.5	V
g_{fs}	Forward Transconductance	$V_{\text{DS}}=5\text{V}, I_{\text{D}}=6\text{A}$	-	15	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{\text{DS}}=24\text{V}, V_{\text{GS}}=0\text{V}$	-	-	10	uA
I_{GSS}	Gate-Source Leakage	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 30	uA
Q_g	Total Gate Charge	$I_{\text{D}}=3\text{A}$	-	4	6.4	nC
Q_{gs}	Gate-Source Charge	$V_{\text{DS}}=15\text{V}$	-	1.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge		-	1.5	-	nC
$t_{\text{d}(\text{on})}$	Turn-on Delay Time	$V_{\text{DS}}=15\text{V}$	-	6	-	ns
t_r	Rise Time	$I_{\text{D}}=1\text{A}$	-	8	-	ns
$t_{\text{d}(\text{off})}$	Turn-off Delay Time	$R_G=6\Omega$	-	13.5	-	ns
t_f	Fall Time	$V_{\text{GS}}=10\text{V}$	-	3	-	ns
C_{iss}	Input Capacitance	$V_{\text{GS}}=0\text{V}$	-	300	480	pF
C_{oss}	Output Capacitance	$V_{\text{DS}}=15\text{V}$	-	60	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	45	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	2.5	5	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_{\text{S}}=1.7\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.2	V
t_{rr}	Reverse Recovery Time	$I_{\text{S}}=6\text{A}, V_{\text{GS}}=0\text{V}$	-	7	-	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100\text{A}/\mu\text{s}$	-	2	-	nC

Notes:

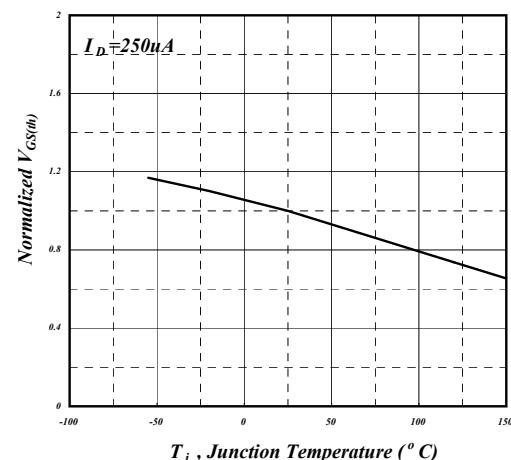
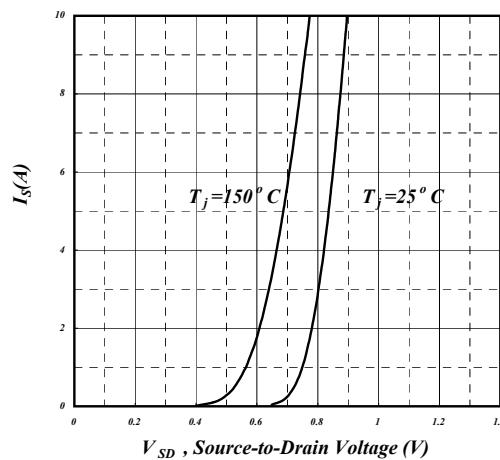
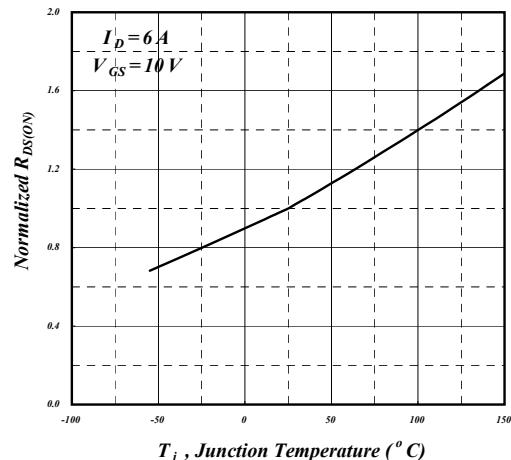
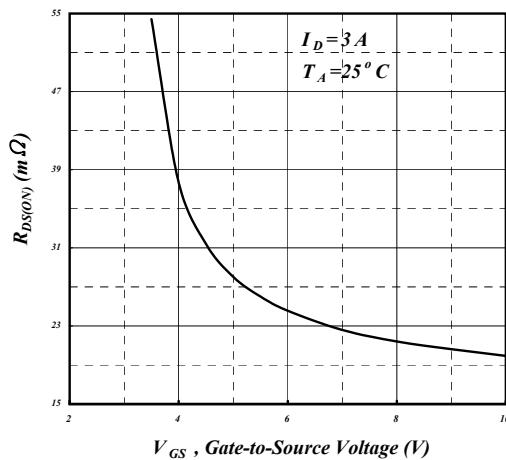
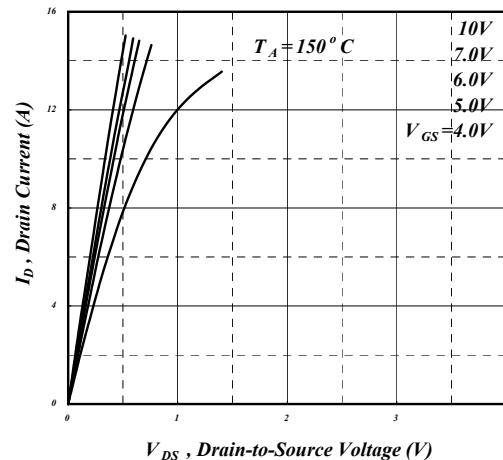
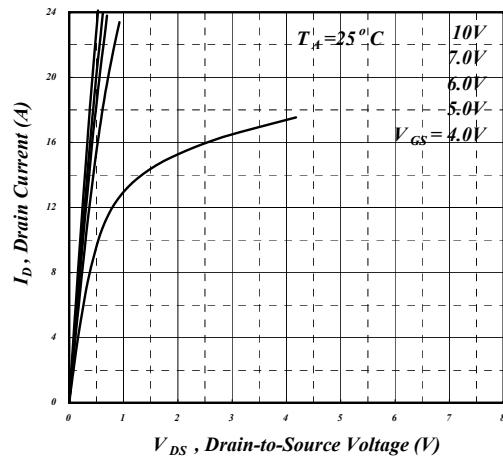
- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; $135^\circ\text{C}/\text{W}$ when mounted on Min. copper pad.
- 4.Starting $T_j=25^\circ\text{C}$, $V_{\text{DD}}=30\text{V}$, $L=0.1\text{mH}$, $R_G=25\Omega$

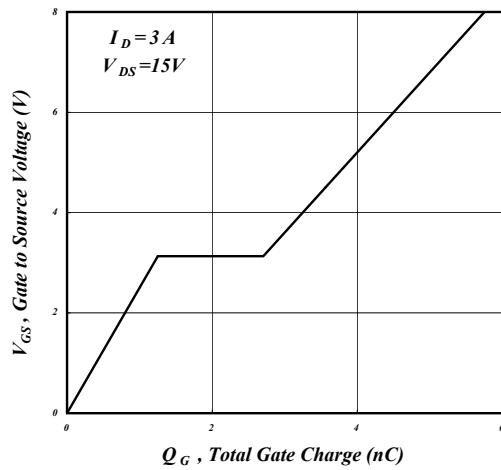
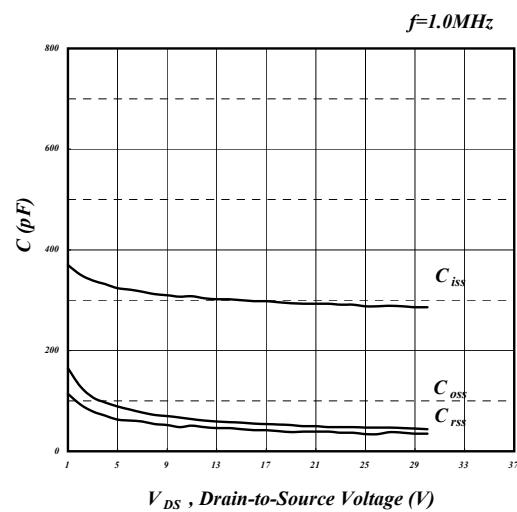
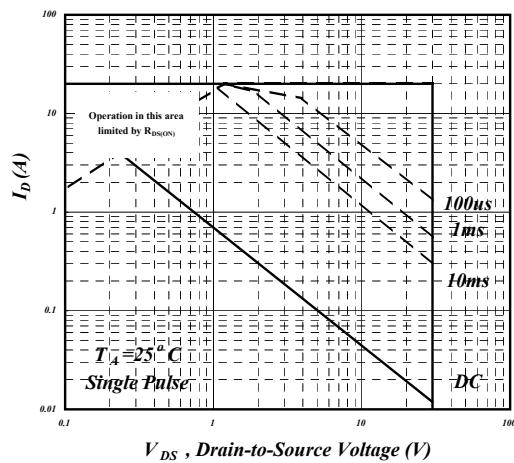
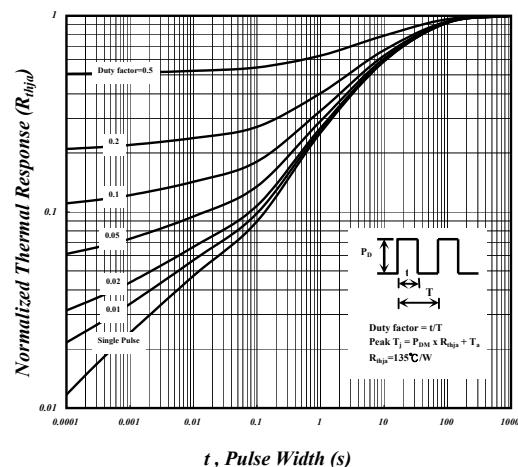
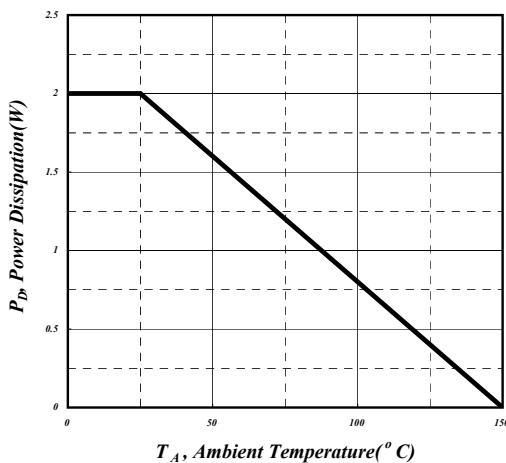
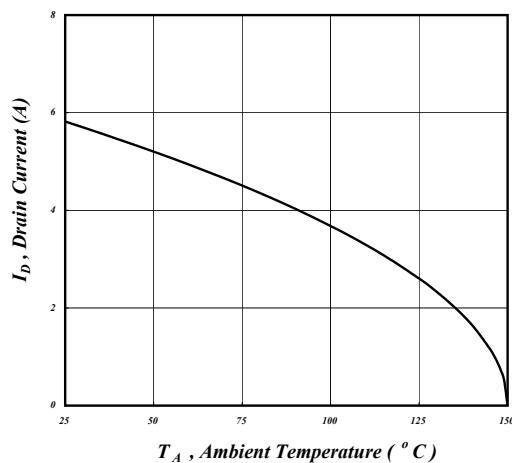
THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

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

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Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics

Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

Fig 11. Total Power Dissipation

Fig 12. Drain Current v.s. Ambient Temperature



AP3A035EM

MARKING INFORMATION

