AP60U02GH

Advanced Power Electronics Corp.

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Simple Drive Requirement**

▼ **Low On-resistance**

▼ **Fast Switching Characteristic**

▼ **RoHS Compliant**

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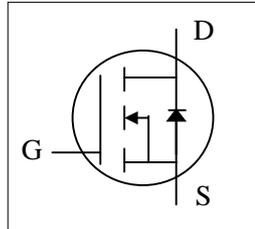
BV_{DSS}	25V
$R_{DS(ON)}$	12mΩ
I_D	40A

G D S **TO-252(H)**
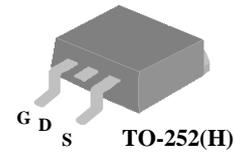
Description

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 TO-252 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	25	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	40	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	28	A
I_{DM}	Pulsed Drain Current[1]	140	A
P_D@T_C=25℃	Total Power Dissipation	25	W
	Linear Derating Factor	0.2	W/℃
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	.		Value	Units
Rthj-c	Thermal Resistance Junction-case	Max.	5.0	℃/W
Rthj-a	Thermal Resistance Junction-ambient	Max.	110	℃/W

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Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	25	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V, I_D=24A	-	-	12	mΩ
		V_{GS}=4.5V, I_D=16A	-	-	20	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1	-	3	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=30A	-	29	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=25V, V_{GS}=0V	-	-	1	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±20V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=30A	-	15	24	nC
Q_{gs}	Gate-Source Charge	V_{DS}=20V	-	3.5	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	9.5	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=15V	-	8	-	ns
t_r	Rise Time	I_D=30A	-	90	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=10V	-	22	-	ns
t_f	Fall Time	R_D=0.5Ω	-	9	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	1070	2180	pF
C_{oss}	Output Capacitance	V_{DS}=25V	-	160	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	155	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=24A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time[2]	I_S=10A, V_{GS}=0V,	-	22	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	13	-	nC

Notes:

1.Pulse width limited by max. junction temperature.

2.Pulse test
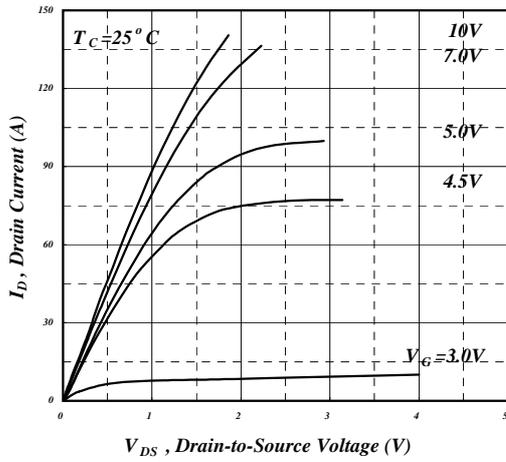
Fig 1. Typical Output Characteristics
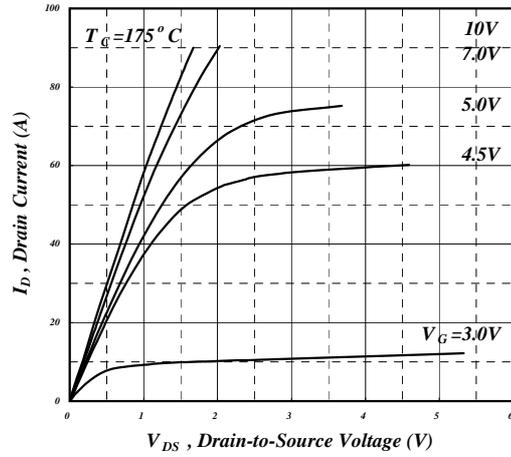

**Fig 2. Typical Output Characteristics**
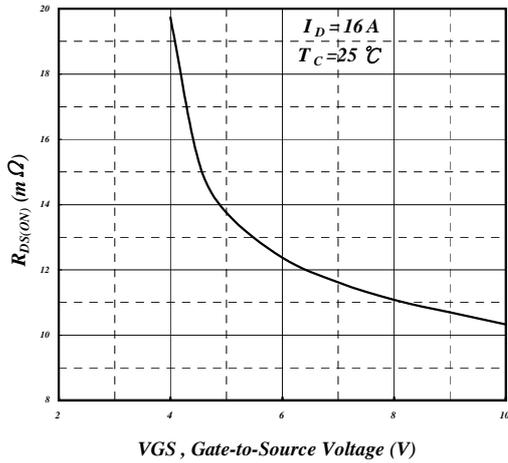
**Fig 3. On-Resistance v.s. Gate Voltage**
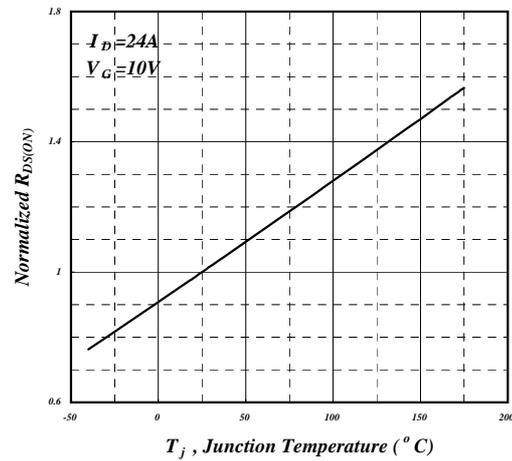
**Fig 4. Normalized On-Resistance
v.s. Junction Temperature**
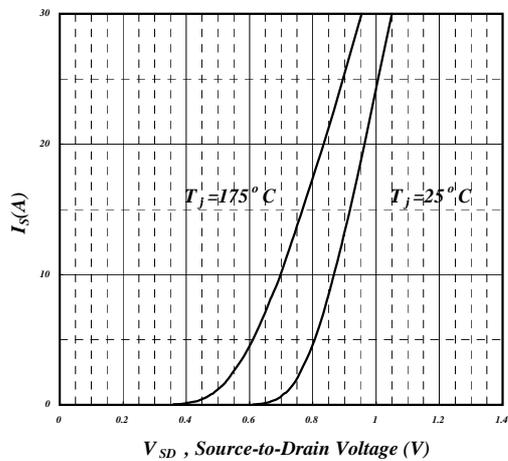
**Fig 5. Forward Characteristic of
Reverse Diode**
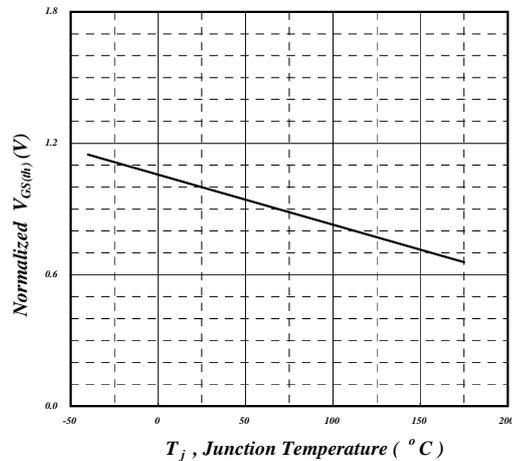
**Fig 6. Gate Threshold Voltage v.s.
Junction Temperature**
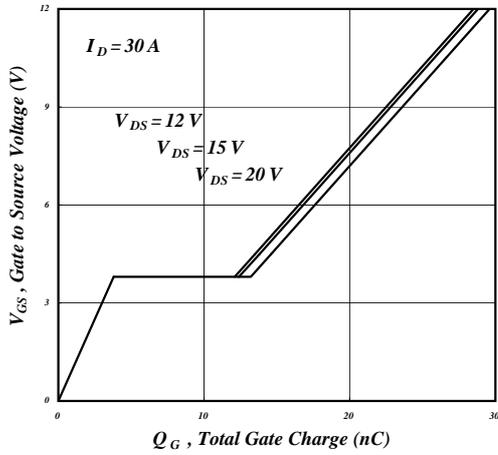
Fig7. Gate Charge Characteristics
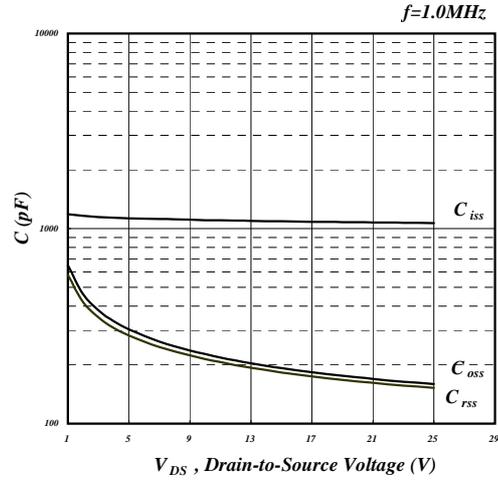
Fig 8. Typical Capacitance Characteristics
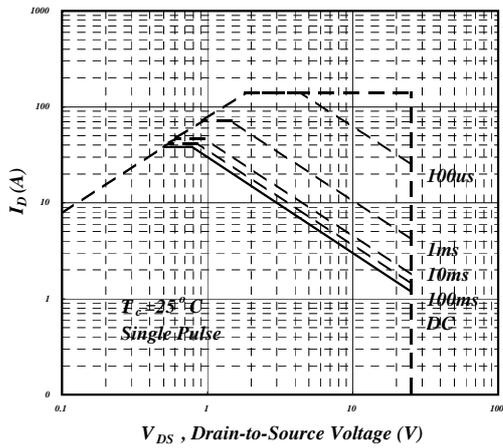
Fig 9. Maximum Safe Operating Area
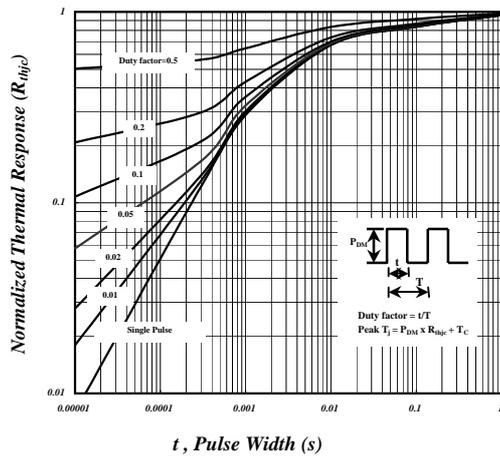
Fig10. Effective Transient Thermal Impedance
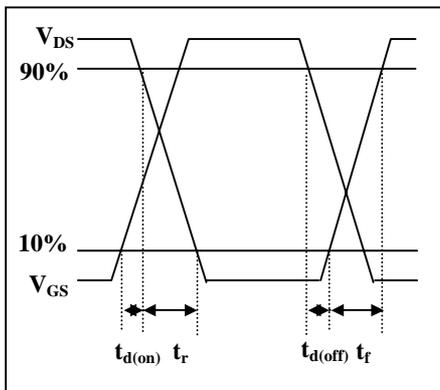
Fig 11. Switching Time Waveform
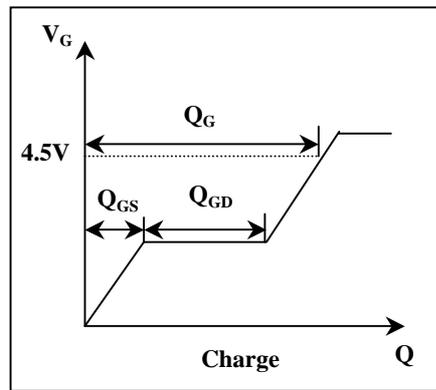
Fig 12. Gate Charge Waveform

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Package Outline : TO-252
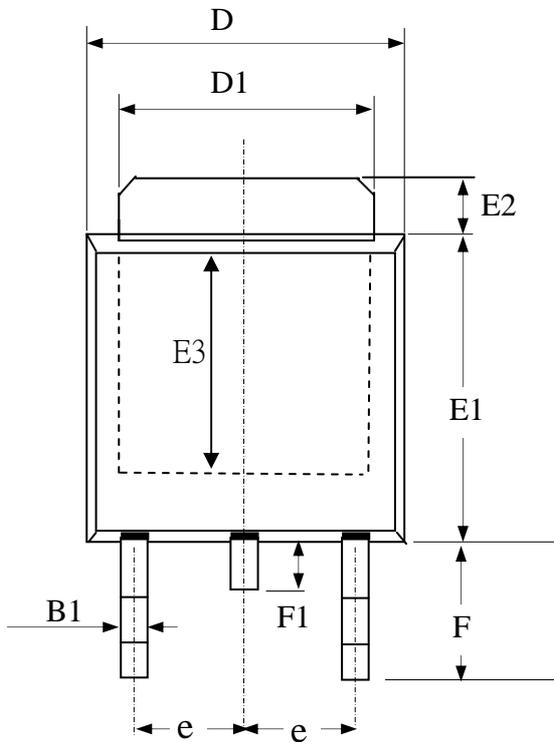
SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	1.80	2.30	2.80
A3	0.40	0.50	0.60
B1	0.40	0.70	1.00
D	6.00	6.50	7.00
D1	4.80	5.35	5.90
E3	3.50	4.00	4.50
F	2.20	2.63	3.05
F1	0.5	0.85	1.20
E1	5.10	5.70	6.30
E2	0.50	1.10	1.80
e	--	2.30	--
C	0.35	0.50	0.65

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

R : 0.127~0.381

(0.1mm
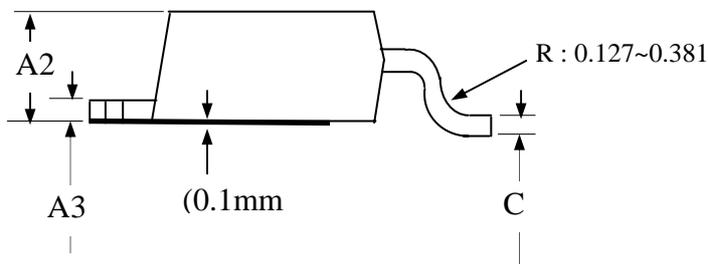
Part Marking Information & Packing : TO-252
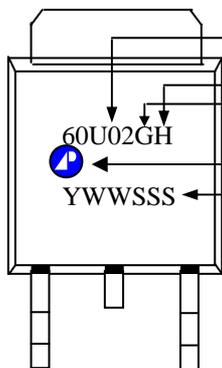
Part Number

Package Code
meet Rohs requirement

60U02GH

LOGO

YWWSSS

Date Code (YWWSSS)

Y：Last Digit Of The Year

WW：Week

SSS：Sequence