

FGW75N60HD

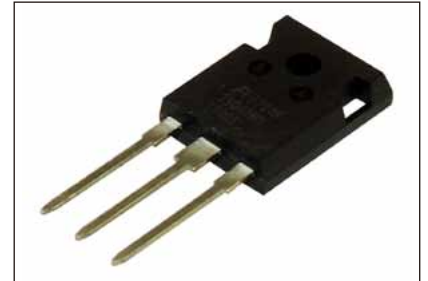
Discrete IGBT (High-Speed V series) 600V / 75A

■ Features

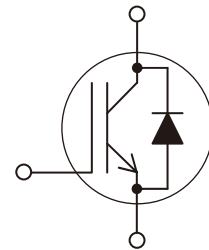
- Low power loss
- Low switching surge and noise
- High reliability, high ruggedness (RBSOA, SCSOA etc.)

■ Applications

- Uninterruptible power supply
- Power conditioner
- Power factor correction circuit



■ Equivalent circuit



■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings (at T_c=25°C unless otherwise specified)

Items	Symbols	Characteristics	Units	Remarks
Collector-Emitter voltage	V _{CE(S)}	600	V	
Gate-Emitter voltage	V _{GES}	±20	V	
DC Collector Current	I _{C@25}	100	A	T _c =25°C, T _j =150°C Note *1
	I _{C@100}	75	A	T _c =100°C, T _j =150°C
Pulsed Collector Current	I _{CP}	225	A	Note *2
Turn-Off Safe Operating Area	-	225	A	V _{CE} 600V, T _j 175°C
Diode Forward Current	I _{F@25}	60	A	Note *1
	I _{F@100}	35	A	
Diode Pulsed Current	I _{FP}	225	A	Note *1
Short Circuit Withstand Time	t _{SC}	5	μs	V _{CC} 300V, V _{GE} =12V T _j 150°C
IGBT Max. Power Dissipation	P _{D,IGBT}	500	W	T _c =25°C
FWD Max. Power Dissipation	P _{D,FWD}	190		T _c =25°C
Operating Junction Temperature	T _j	-40~+175	°C	
Storage Temperature	T _{sig}	-55~+175	°C	

Note *1 : Current value limited by bonding wire.
Note *2 : Pulse width limited by T_{jmax}.

● Electrical characteristics (at T_j= 25°C unless otherwise specified)

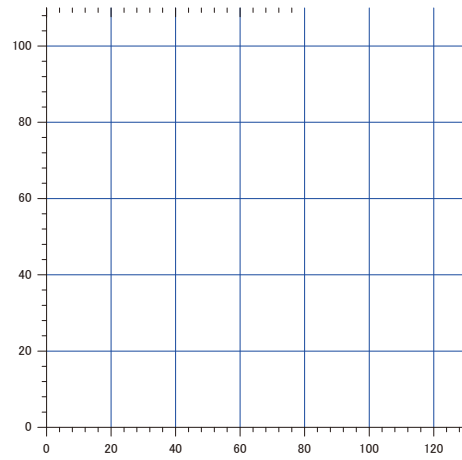
Items	Symbols	Conditions	Characteristics			Units	
			min.	typ.	max.		
Collector-Emitter Breakdown Voltage	V _{(BR)CES}	I _c = 250μA, V _{GE} = 0V	600	-	-	V	
Zero Gate Voltage Collector Current	I _{CES}	V _{CE} = 600V, V _{GE} = 0V	T _j =25°C	-	-	250	μA
			T _j =175°C	-	-	10	mA
Gate-Emitter Leakage Current	I _{GES}	V _{CE} = 0V, V _{GE} = ±20V	-	-	200	nA	
Gate-Emitter Threshold Voltage	V _{GE(th)}	V _{CE} = +20V, I _c = 75mA	4.0	5.0	6.0	V	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	V _{GE} = +15V, I _c = 75A	T _j =25°C	-	1.50	1.95	V
			T _j =175°C	-	1.80	-	
Input Capacitance	C _{ies}	V _{CE} =25V	-	6150	-	pF	
Output Capacitance	C _{oes}	V _{GE} =0V	-	300	-		
Reverse Transfer Capacitance	C _{res}	f=1MHz	-	240	-		
Gate Charge	Q _G	V _{CC} = 400V I _c = 75A V _{GE} = 15V	-	460	-	nC	
Turn-On Delay Time	t _{d(on)}	T _j = 25°C	-	45	-	ns	
Rise Time	t _r	V _{CC} = 400V	-	130	-		
Turn-Off Delay Time	t _{d(off)}	I _c = 75A	-	450	-		
Fall Time	t _f	V _{GE} = 15V	-	105	-		
Turn-On Energy	E _{on}	R _G = 10 L = 500μH	-	3.0	-		
Turn-Off Energy	E _{off}	Energy loss include "tail" and FWD reverse recovery.	-	4.2	-	mJ	
Turn-On Delay Time	t _{d(on)}	T _j = 175°C V _{CC} = 400V I _c = 75A V _{GE} = 15V	-	45	-	ns	
			-	130	-		
			-	490	-		
			-	120	-		
			-	4.3	-		
Turn-Off Energy	E _{off}	Energy loss include "tail" and FWD reverse recovery.	-	4.8	-	mJ	

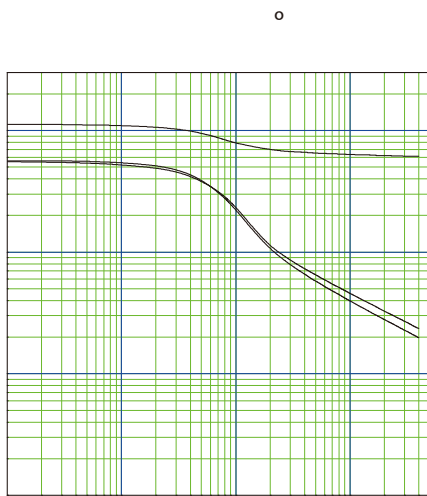
● FWD Characteristics

Description	Symbol	Conditions	Characteristics			Unit	
			min.	typ.	max.		
Forward Voltage Drop	V_F	$I_F=35A$	$T_j=25^{\circ}C$	-	2.0	2.6	V
			$T_j=175^{\circ}C$	-	1.4	-	V
Diode Reverse Recovery Time	t_{rr1}	$V_{cc}=30V, I_F = 3.5A$ $-di/dt=200A/\mu s$	-	26	-	ns	
Diode Reverse Recovery Time	t_{rr2}	$V_{cc}=400V$ $I_F=35A$ $-di/dt=200A/\mu s$	-	0.05	-	μs	
Diode Reverse Recovery Charge	Q_{rr}	$T_j=25^{\circ}C$	-	0.12	-	μC	
Diode Reverse Recovery Time	t_{rr2}	$V_{cc}=400V$ $I_F=35A$	-	0.19	-	μs	
Diode Reverse Recovery Charge	Q_{rr}	$-di/dt=200A/\mu s$ $T_j=175^{\circ}C$	-	1.10	-	μC	

● Thermal resistance characteristics

■ Characteristics (Representative)





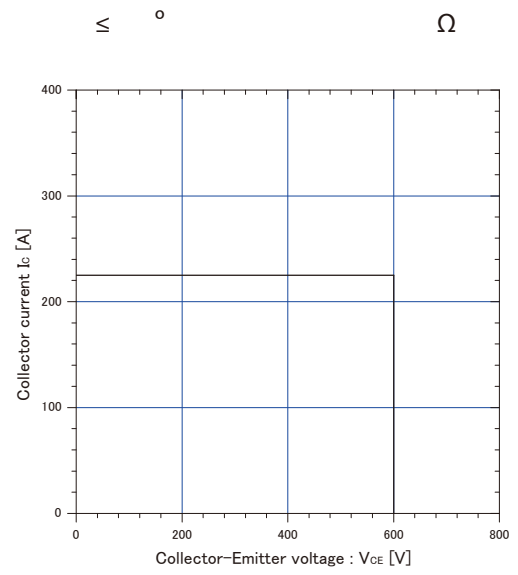
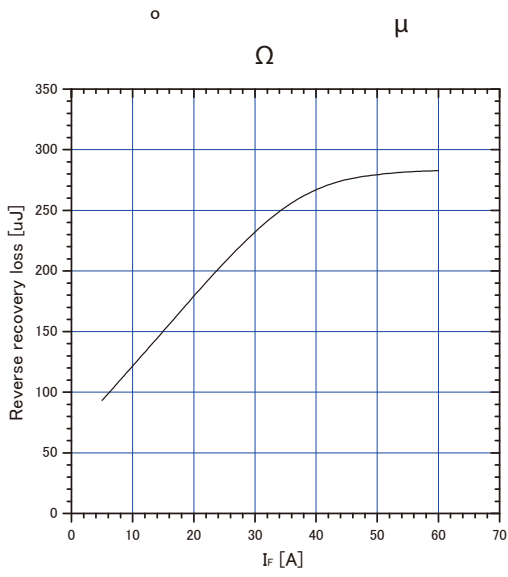
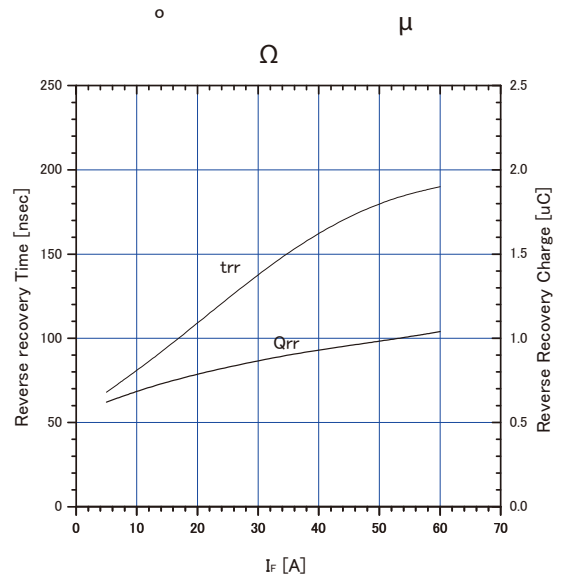
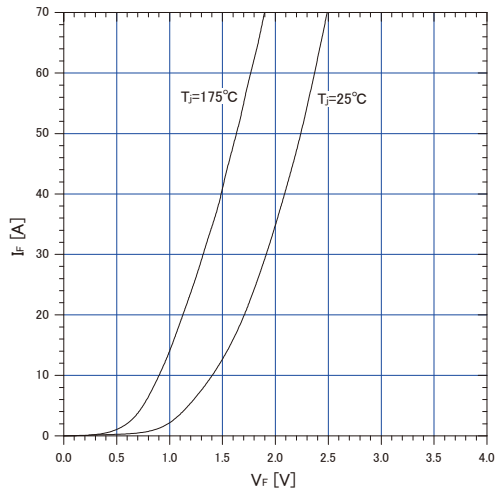
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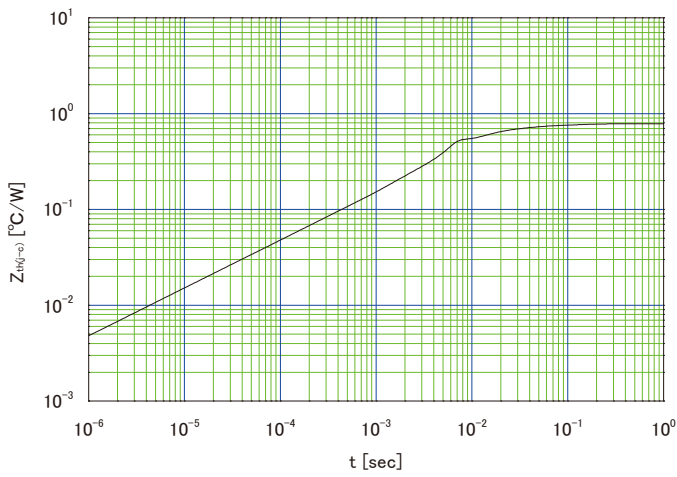
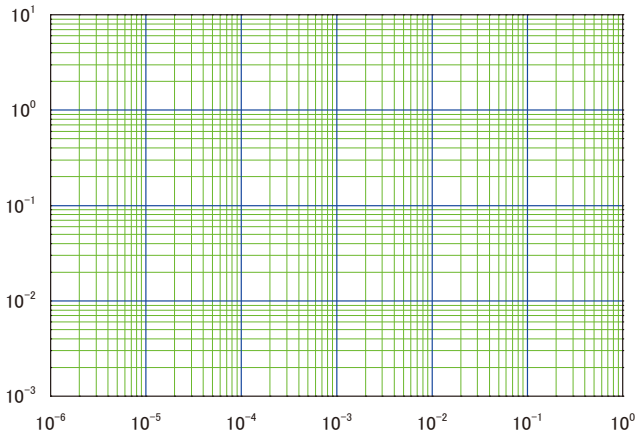
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μ

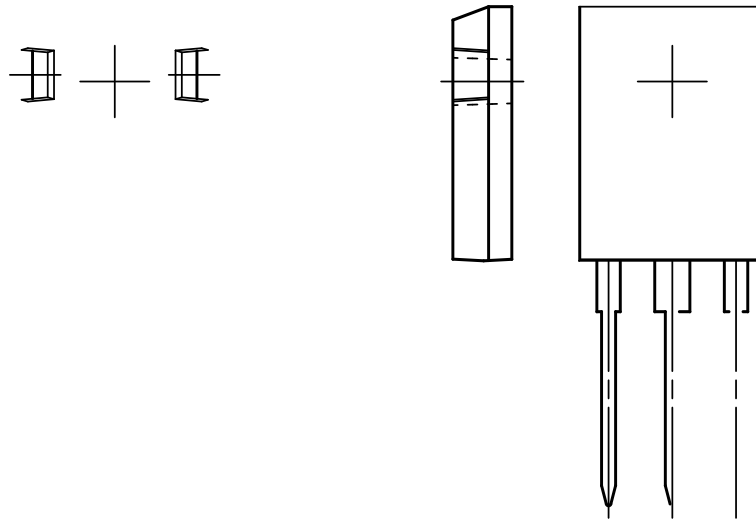
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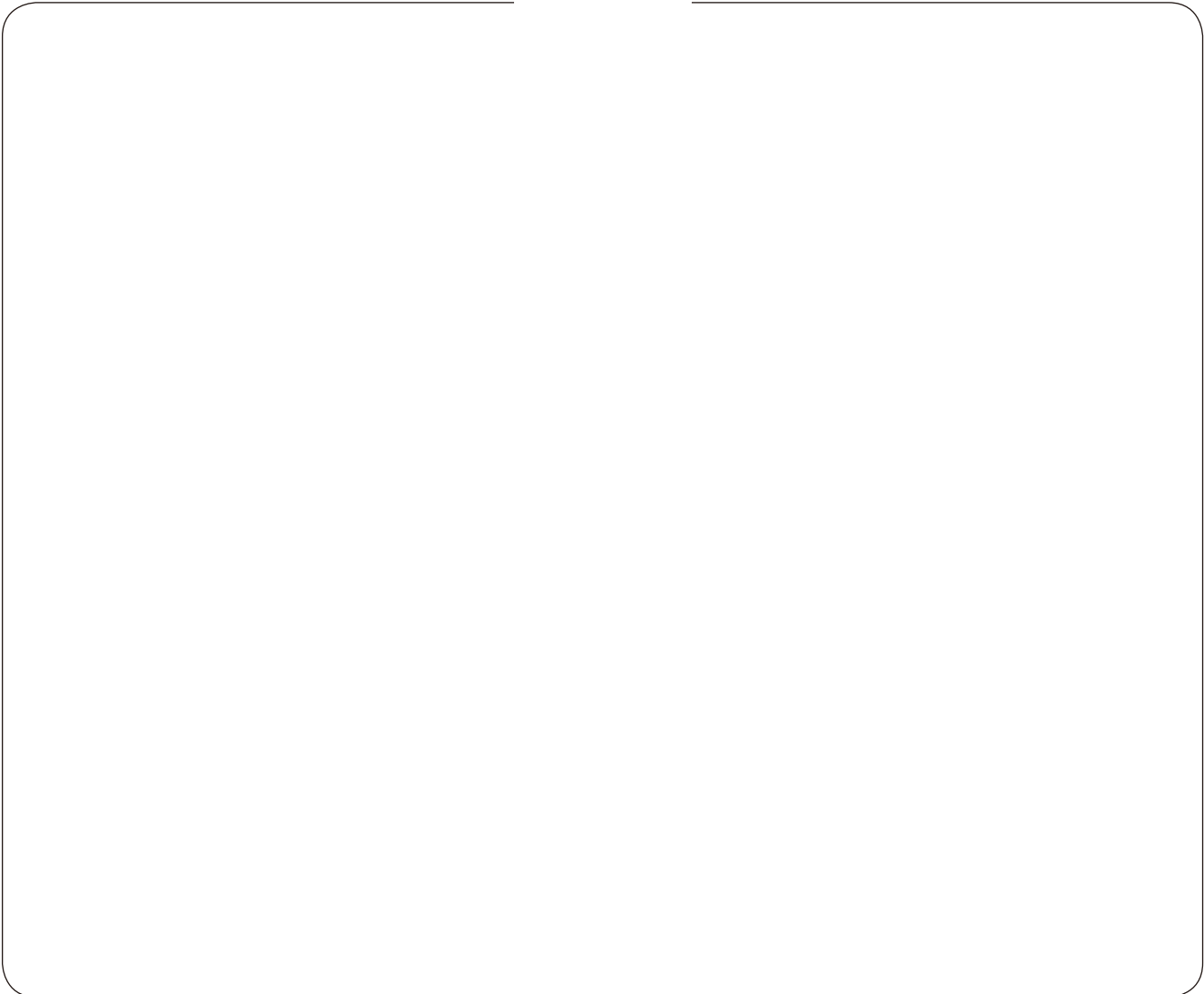
μ





■ Outline Drawings, mm





Technical Information

IGBT Modules

- Please refer to URLs below for further information about products, application manuals and design support.
- 关于本规格书中没有记载的产品信息，应用手册，技术信息等，请参考以下链接。
- 本データシートに記載されていない製品情報，アプリケーションマニュアル，デザインサポートは以下の URL をご参照下さい。

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