

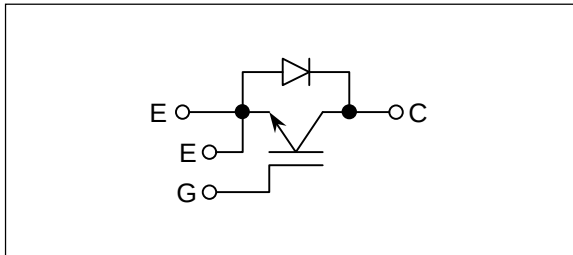
MBN400GR12

[Rated 400A/1200V, Single-pack type]

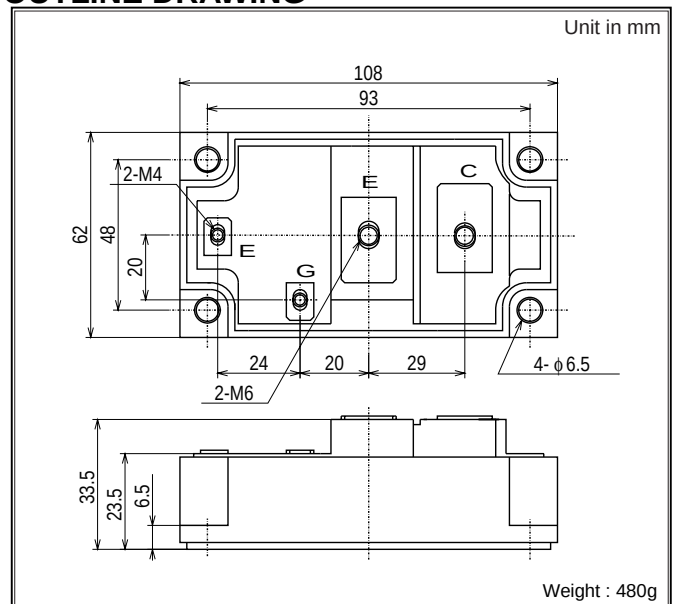
FEATURES

- Low saturation voltage and high speed.
- Low turn-OFF switching loss.
- Low noise due to build-in free-wheeling diode. (Ultra Soft and Fast recovery Diode (USFD))
- High reliability structure.
- Isolated heat sink (terminals to base).

CIRCUIT DIAGRAM



OUTLINE DRAWING



ABSOLUTE MAXIMUM RATINGS($T_c=25^\circ\text{C}$)

Item	Symbol	Unit	Value
Collector-Emitter Voltage	V_{CES}	V	1200
Gate-Emitter Voltage	V_{GES}	V	± 20
Collector Current	DC	A	400
	1ms		800
Forward Current	DC	A	400 ^{*1}
	1ms		800
Collector Power Dissipation	P_C	W	2080
Junction Temperature	T_J	$^\circ\text{C}$	$-40 \sim +150$
Storage Temperature	T_{stg}	$^\circ\text{C}$	$-40 \sim +125$
Isolation Voltage	V_{iso}	V_{RMS}	2500(AC 1 minute)
Screw Torque	Terminals (M4/M6)	N·m (kgf·cm)	1.37(14) / 2.94(30) ^{*2}
	Mounting		2.94(30) ^{*3}

Notes; ^{*1}: RMS current of Diode ≤ 120 Arms

^{*2}: Recommended value 1.18 / 2.45 N·m (12 / 25 kgf·cm)

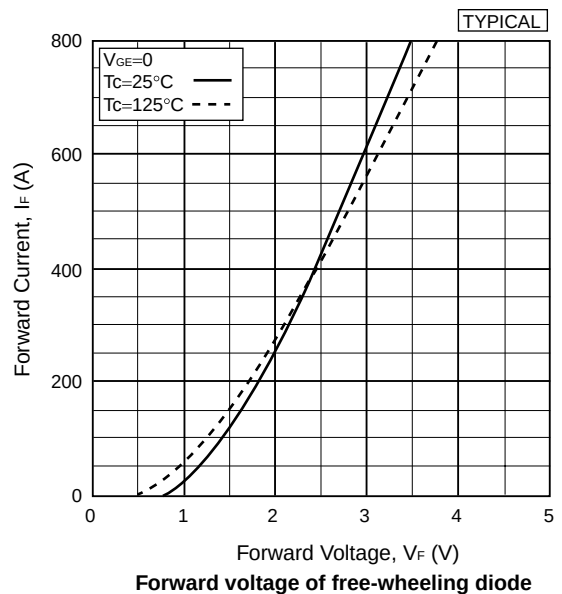
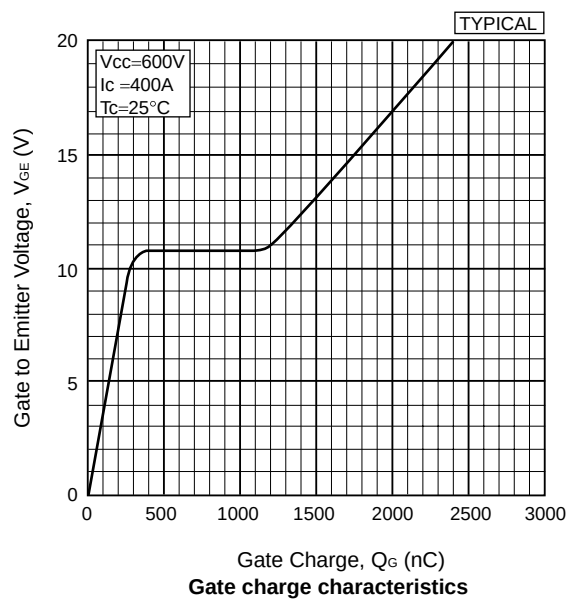
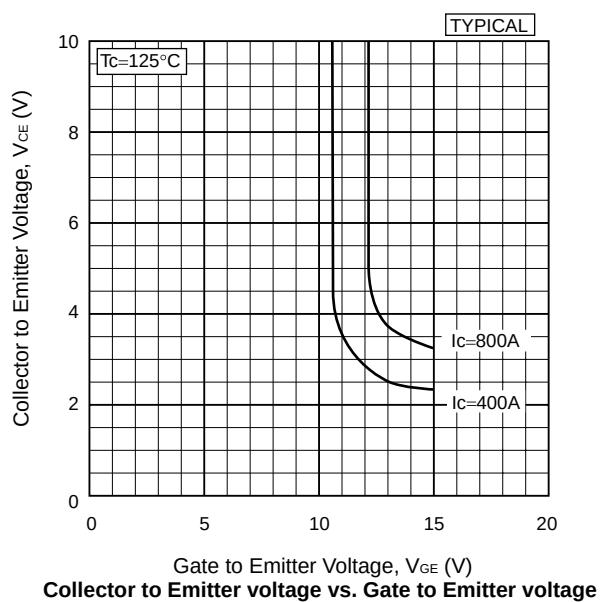
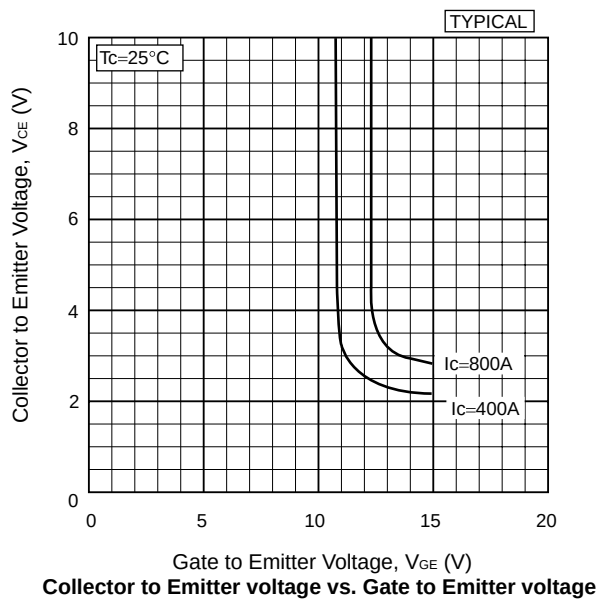
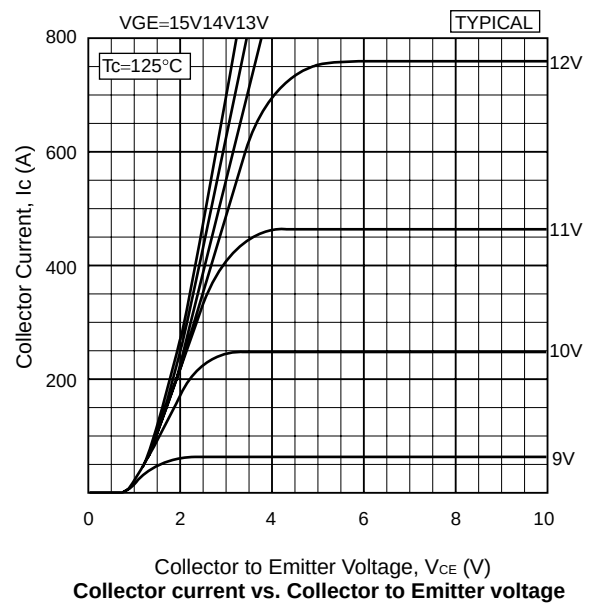
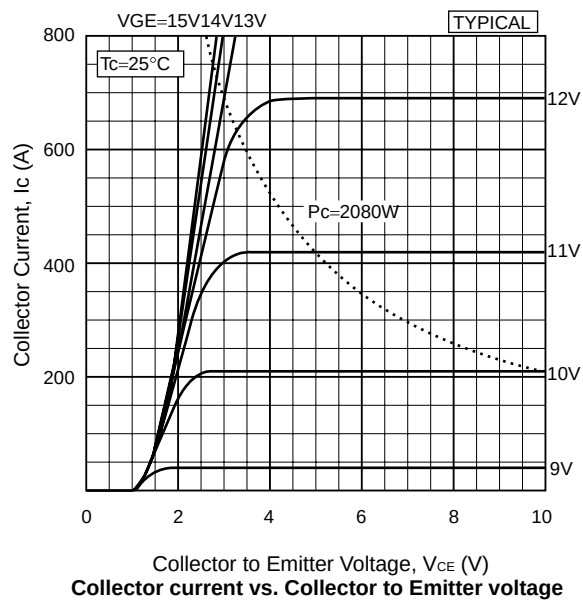
^{*3}: Recommended value 2.45 N·m (25 kgf·cm)

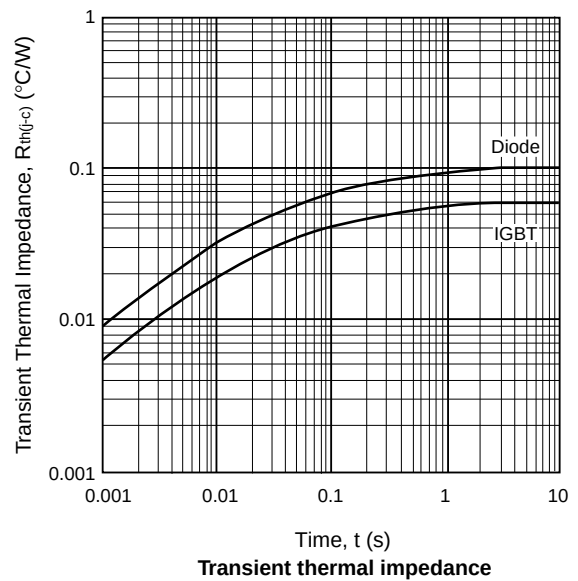
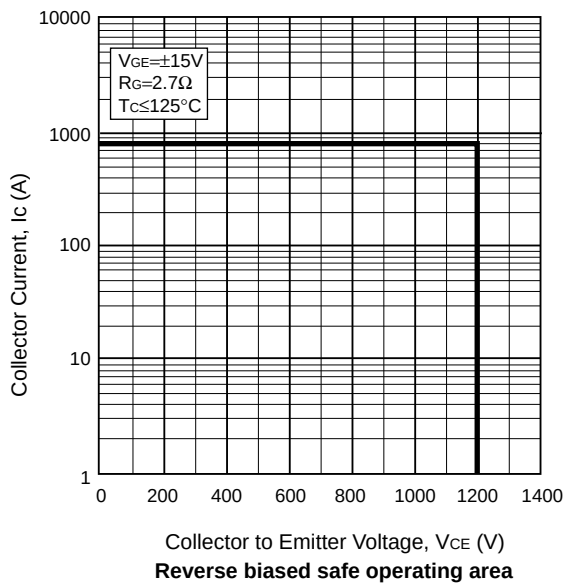
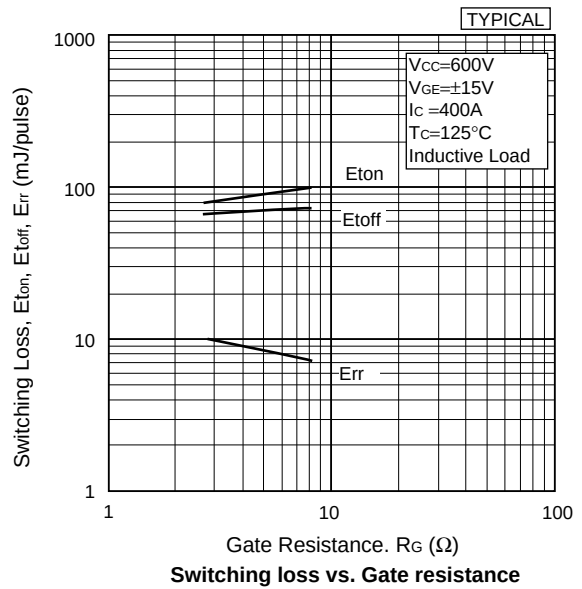
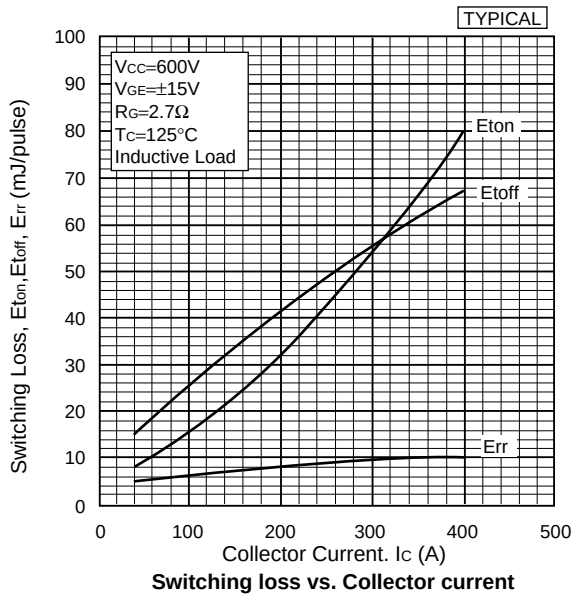
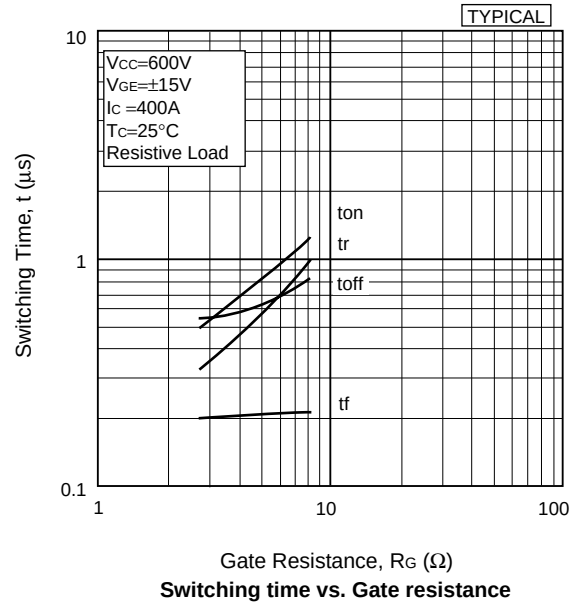
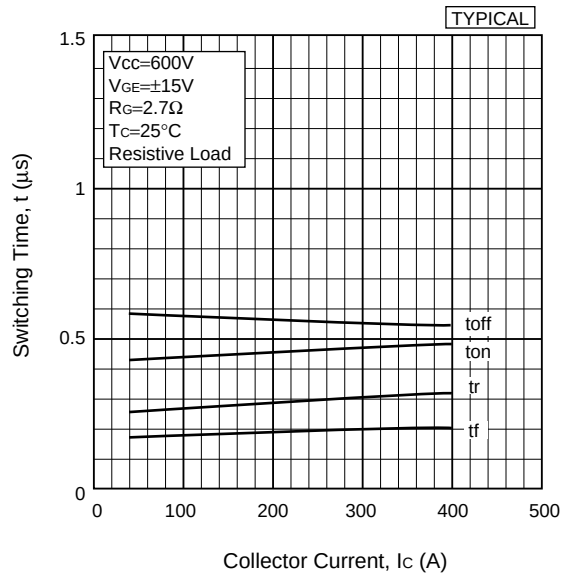
CHARACTERISTICS ($T_c=25^\circ\text{C}$)

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector-Emitter Cut-Off Current	I_{CES}	mA	—	—	1.0	$V_{CE}=1200\text{V}$, $V_{GE}=0\text{V}$
Gate-Emitter Leakage Current	I_{GES}	nA	—	—	± 500	$V_{GE}=\pm 20\text{V}$, $V_{CE}=0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	—	2.2	2.8	$I_C=400\text{A}$, $V_{GE}=15\text{V}$
Gate-Emitter Threshold Voltage	$V_{GE(TH)}$	V	—	—	10	$V_{CE}=5\text{V}$, $I_C=400\text{mA}$
Input Capacitance	C_{ies}	pF	—	37000	—	$V_{CE}=10\text{V}$, $V_{GE}=0\text{V}$, $f=1\text{MHz}$
Switching Times	Rise Time	t_r	—	0.25	0.7	$V_{CC}=600\text{V}$ $R_L=1.5\Omega$ $R_G=2.7\Omega$ ^{*4} $V_{GE}=\pm 15\text{V}$
	Turn-ON Time	t_{on}	—	0.4	0.9	
	Fall Time	t_f	—	0.2	0.35	
	Turn-Off Time	t_{off}	—	0.7	1.1	
Peak Forward Voltage Drop	V_{FM}	V	—	2.5	3.5	$I_F=400\text{A}$, $V_{GE}=0\text{V}$
Reverse Recovery Time	t_{rr}	μs	—	—	0.4	$I_F=400\text{A}$, $V_{GE}=-10\text{V}$, $di/dt=400\text{A}/\mu\text{s}$
Thermal Impedance	IGBT	$R_{th(j-c)}$	$^\circ\text{C/W}$	—	0.06	Junction to case
	FWD	$R_{th(f-c)}$			0.10	

Notes; ^{*4}: R_G value is the test condition's value for decision of the switching times, not recommended value, please determine the suitable R_G value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted.

Remark; The specification given herein, is subject to change without prior notice to improve product characteristics.





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