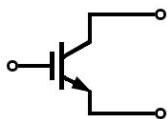
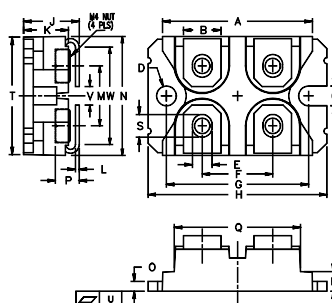


Discrete IGBTs



Dimensions SOT-227(ISOTOP)



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	0.031	0.033

	I _C	V _{CE}
	A	V
SG75S12S	75	1200

Maximum Rated Values

(T_{vj} = 25°C, unless specified otherwise)

Parameter	Symbol	Conditions	Values	Unit
Collector-Emitter Voltage	V _{CES}	V _{GE} shorted	1200	V
DC Collector Current	I _C	T _{hs} = 70°C	75	A
Peak Collector Current	I _{CM}	Pulse: t _p = 1ms, T _{hs} = 70°C	150	A
Gate Emitter Voltage	V _{GES}		±20	V
Total Power Dissipation	P _{tot}	T _{hs} = 25°C per switch	340	W
IGBT Switching SOA	SwSOA	I _C = 150A, V _{CEM} = 1200V, V _{CC} ≤ 1000V, V _{GE} = ±15V, T _{vj} = 125°C voltages measured on auxiliary terminals		
IGBT Short Circuit SOA	SCSOA	V _{CC} = 900V, V _{CEM} = 1200V, t _p = 10μs, V _{GE} = ±15V, T _{vj} = 125°C		
DC Forward Current	I _F		75	A
Peak Forward Current	I _{FM}	Pulse: t _p = 1ms, T _{hs} = 70°C	150	A

Maximum Rated Values (cont.)

(T_{vj} = 25°C, unless specified otherwise)

Parameter	Symbol	Conditions	Values	Unit
Junction Temperature	T _{vj}		-40 ~ 150	°C
Storage Temperature	T _{tstg} / T _{cop}		-40 ~ 125	°C
Isolation Voltage	V _{iso}	1min, f = 50Hz	2500	V

Discrete IGBTs

IGBT Characteristic Values

(T_{vj} = 25°C, unless specified otherwise)

Parameter	Sybmol	Conditions	min.	typ.	max.	Unit
Collector-Emitter Saturation Voltage	V _{CE(sat)} *	I _C = 75A, V _{GE} = 15V	T _{vj} = 25°C	2.00	2.35	V
			T _{vj} = 125°C	2.20		V
Collector Cut-off Current	I _{CES}	V _{CE} = 1200V, V _{GE} = 0V, T _{vj} = 125°C			6	mA
Gate-Emitter leakage Current	I _{GES}	V _{CE} = 0V, V _{GE} = ±20V, T _{vj} = 125°C			±500	nA
Gate-Emitter Threshold Voltage	V _{GE(TO)}	I _C = 3mA, V _{CE} = V _{GE}	4.5		6.5	V
Total Gate Charge	Q _{ge}	I _C = 75A, V _{CE} = 600V, V _{GE} = -15 to 15V		750		nC
Input Capacitance	C _{ies}	V _{CE} = 25V, V _{GE} = 0V, f = 1MHz		6.5		nF
Output Capacitance	C _{oes}			1.6		nF
Reverse Transfer Capacitance	C _{res}			1.4		nF
Turn-On Delay Time	t _{d(on)}	I _C = 75A, V _{CC} = 600V, R _{gon} = 15Ω, T _{vj} = 125°C, V _{GE} = ±15V		0.1		μs
Rise Time	t _r			0.05		μs
Turn-Off Delay Time	t _{d(off)}	I _C = 75A, V _{CC} = 600V, R _{goff} = 15Ω, T _{vj} = 125°C, V _{GE} = ±15V		0.50		μs
Fall Time	t _f			0.09		μs
Turn-on Switching Energy	E _{on}	R _{gon} = 15Ω I _C = 75A, T _{vj} = 125°C, V _{CC} = 600V, V _{GE} = ±15V, inductive load, integrated up to: 3% V _{CE} (E _{on}), 1% I _C (E _{off})		8.5		mJ
	E _{off}			7.0		mJ
Module stray Inductance Plus to Minus	L _{sDC}				25	nH
Resistance terminal-chip	R _{CC'+EE'}	T _{hs} = 25°C		1.25		mΩ
		T _{hs} = 125°C		1.90		

* Note 1: Collector emitter saturation voltage is given at die level.

Discrete IGBTs

Diode Characteristic Values

(T_j = 25°C, unless specified otherwise)

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Forward Voltage	V _F *	I _F = 75A		2.00	2.40	V
				2.00		
Reverse Recovery Current	I _{rrm}	I _F = 75A, R _{gon} = 15Ω, V _{CC} = 600V, V _{GE} = ±15V, T _{vj} = 125°C		75		A
Reverse Recovery Charge	Q _{rr}			14		μC
Reverse Recovery Time	t _{rr}			0.35		μs
Reverse Recovery Energy	E _{rec}	I _F = 75A, T _{vj} = 125°C, V _{CC} = 600V, R _{gon} = 15Ω, V _{GE} = ±15V, inductive load, fully integrated		5.5		mJ
Resistance terminal-chip	R _{CC'+EE'}			1.25		mΩ
				1.90		

* Note 2: Forward voltage is given at die level

Thermal Characteristics

(T_j = 25°C, unless specified otherwise)

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
IGBT Thermal Resistance Junction to Heatsink	R _{th j-h Igbt}	Heatsink: flatness < +/-20μm, roughness < 6μm without ridge Thermal grease: thickness: 30μm < t < 50μm			0.370	°C/W
Diode Thermal Resistance Junction to Heatsink	R _{th j-h Diode}				0.740	°C/W
Equivalent IGBT Thermal Resistance Junct. to Case	R _{th j-c Igbt}				0.235	°C/W
Equivalent Diode Thermal Resistance Junct. to Case	R _{th j-c Diode}				0.550	°C/W

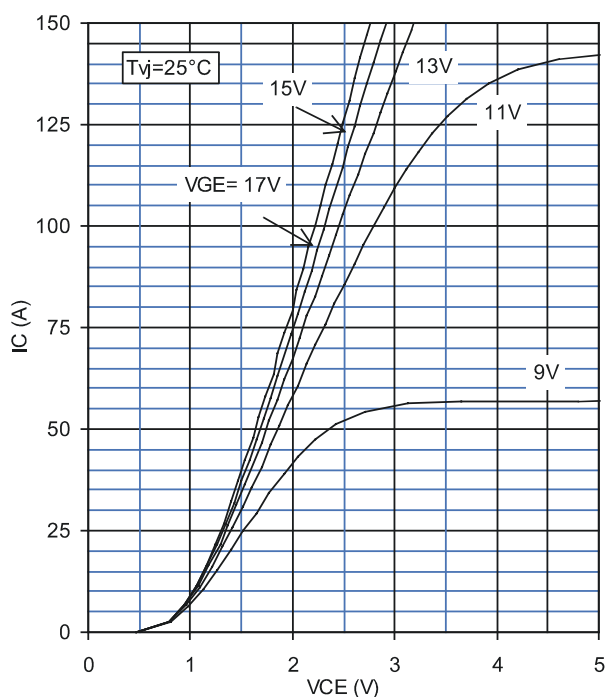


Fig. 1 Typ. Output Characteristics
at $T_{vj}=25^{\circ}\text{C}$

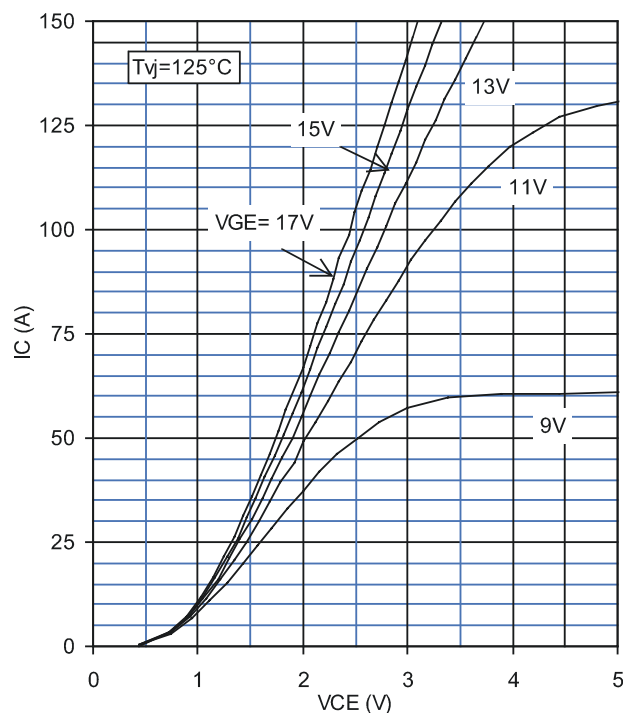


Fig. 2 Typ. Output Characteristics
at $T_{vj}=125^{\circ}\text{C}$

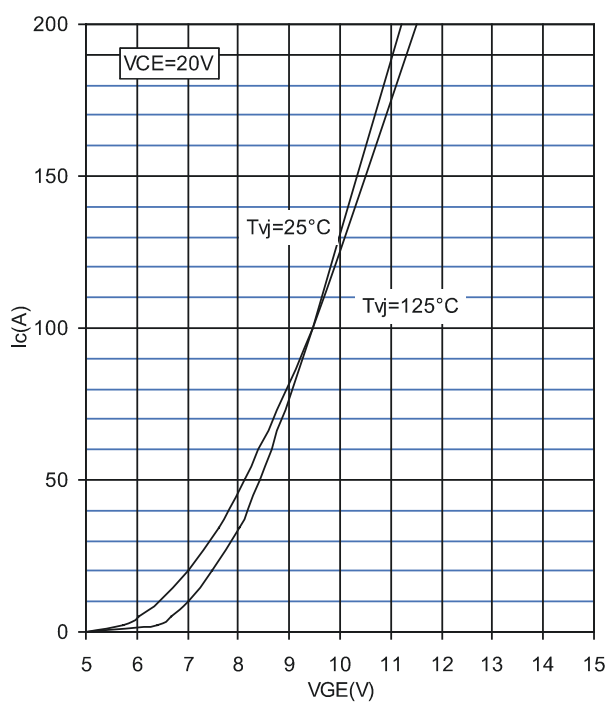


Fig. 3 Typ. Transfer Characteristics

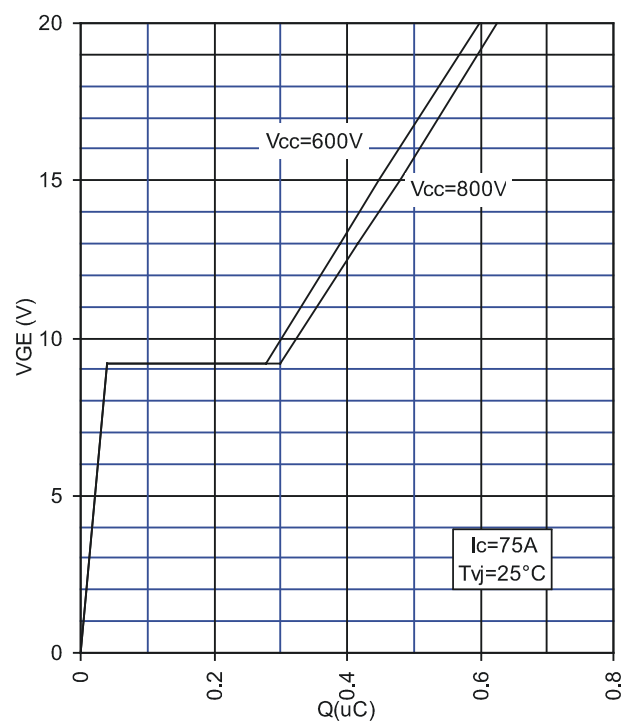


Fig. 4 Typ. Gate charge Characteristics

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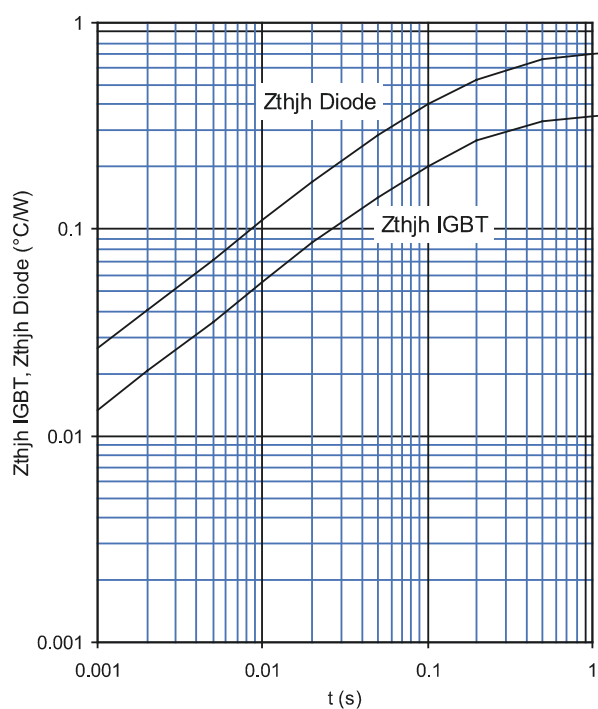


Fig. 13 Typ. Thermal impedance vs time