

F5062H

FUJI High-side IPS

High-side Intelligent Power Switch

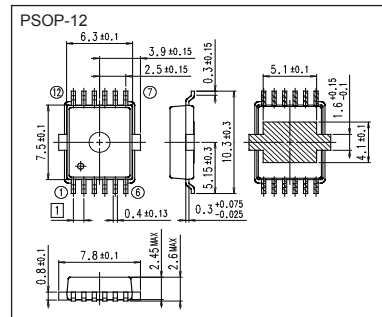
Features

- Low on-state resistance
- High inductive load energy withstand capability
- Over current detection
- Over temperature shutdown
- Reverse battery protection

Applications

- Motor driver
- Replacements for fuse and relay

Outline drawings [mm]



Connection

TERMINAL No.	FUNCTION
①	OUT
②	OUT
③	OUT
④	OUT
⑤	NC
⑥	VCC1
⑦	GND
⑧	GND
⑨	NC
⑩	IN
⑪	VCC2
⑫	VCC1

Maximum ratings and characteristics

Absolute maximum ratings (at Tc=25°C)

Description	Symbol	Characteristics	Unit	Remarks
Supply voltage	V _{cc}	35	V	DC
Reverse supply voltage	-V _{cc}	-16	V	t=2min, I _{out} =-18A
Maximum voltage at load short	V _{ccs}	-12	V	DC, I _{out} =-18A
Output current	I _{out}	16	V	0.02Ω < R _{out} < 0.2Ω
Reverse output current	-I _{out}	I _{lim}	A	Pulse 50ms
Input voltage	V _{in}	50	A	DC
Maximum power dissipation	P _D	-50	A	DC
Operating junction temperature	T _j	-0.3~V _{cc} +0.3	V	DC
Storage temperature	T _{stg}	114	W	-
Single pulse inductive load switch-off energy dissipation	E _{CL}	150	°C	-
		-55~-150	°C	-
		800	mJ	T _j ≤150°C, V _{cc} ≤16V, Single pulse I _{out} =80A, dv/dt≤10V/us

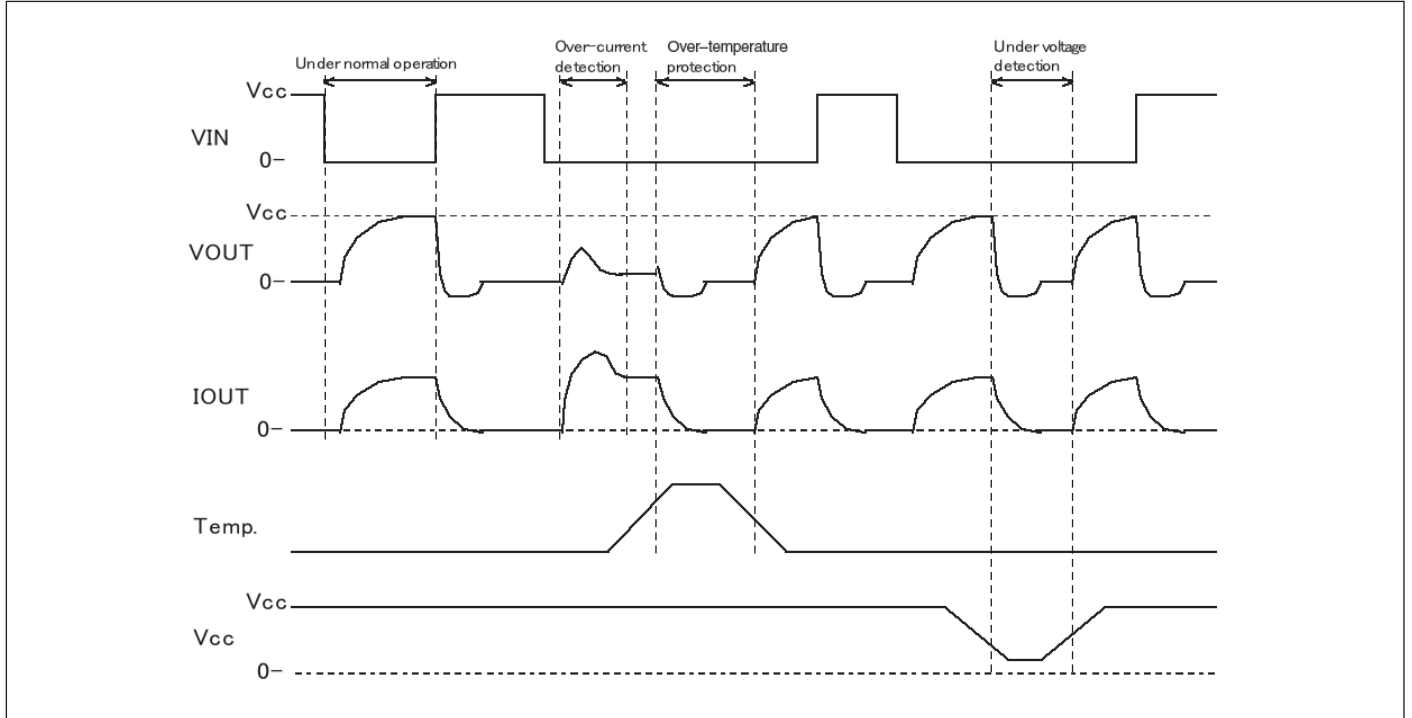
Electrical characteristics (at Tc=-40~150°C, unless otherwise specified.)

Description	Symbol	Conditions	min.	typ.	max.	Unit
Operating voltage	V _{cc}	Tc=-40~150°C	V _{usd}	-	18	V
Standby current 1	I _{cc(off) 1}	V _{cc} =18V, V _{in} =V _{cc} , RL=10Ω, Tc=-40~110°C	-	-	50	μA
Standby current 2	I _{cc(off) 2}	V _{cc} =18V, V _{in} =V _{cc} , RL=10Ω, Tc=-110~150°C	-	-	70	μA
Operating current	I _{cc(on)}	V _{cc} =18V, V _{in} =GND, RL=OPEN	-	-	10	mA
Input voltage	V _{inL}	V _{cc} =6~18V, RL=10Ω	-	-	0.4V _{cc}	V
Input hysteresis voltage	V _{inHYST}	V _{cc} =6~18V	0.6V _{cc}	-	-	V
Input current	I _{inL}	V _{cc} =18V, 0V≤V _{in} ≤7.2V	0.05V _{cc}	-	-	V
	I _{inH}	V _{cc} =18V, V _{in} =10.8V	-80	-	-10	μA
On-state resistance	R _{DS(on)}	8V≤V _{cc} ≤18V, I _{out} =40A, Tc=25°C, V _{in} =GND	-	6	8	mΩ
		8V≤V _{cc} ≤18V, I _{out} =40A, Tc=150°C, V _{in} =GND	-	11	14.5	
		6V≤V _{cc} <8V, RL=0.2Ω, Tc=25°C, V _{in} =GND	-	6.5	12	
		6V≤V _{cc} <8V, RL=0.2Ω, Tc=150°C, V _{in} =GND	-	12	22	
Turn-on time	t _{d(on)}	V _{cc} =16V, RL=0.25Ω, V _{in} =V _{cc} →GND	0.15	-	0.6	ms
Turn-off time	t _{d(off)}	V _{cc} =16V, RL=0.25Ω, V _{in} =GND→V _{cc}	-	-	1.0	ms
Rise time	t _r	V _{cc} =16V, RL=0.25Ω, V _{in} =V _{cc} →GND	-	-	0.6	ms
Fall time	t _f	V _{cc} =16V, RL=0.25Ω, V _{in} =GND→V _{cc}	-	-	0.6	ms
Under voltage detection	V _{usd}	V _{cc} =6→2.5V, RL=10Ω, V _{in} =GND	2.5	-	-	V
Under voltage recovery	V _{usdR}	V _{cc} =2.5→6V, RL=10Ω, V _{in} =GND	-	-	6.0	V
Overheating detection temperature	T _{tsd}	V _{cc} =6~18V, V _{in} =GND	155	-	205	°C
Recovery temperature	T _{tr}		150	-	-	°C
Hysteresis temperature	T _{hyst}		5	10	-	°C
Over-current detection	I _{lim}	V _{cc} =8~16V, V _{in} =GND, Tc=-40~130°C	96	-	-	A
Output-clamp voltage	V _{clamp(L)}	V _{cc} =16V, L=10mH/10Ω, V _{in} =GND→V _{cc} , Tc=150°C	-5.9	-	-4.2	V

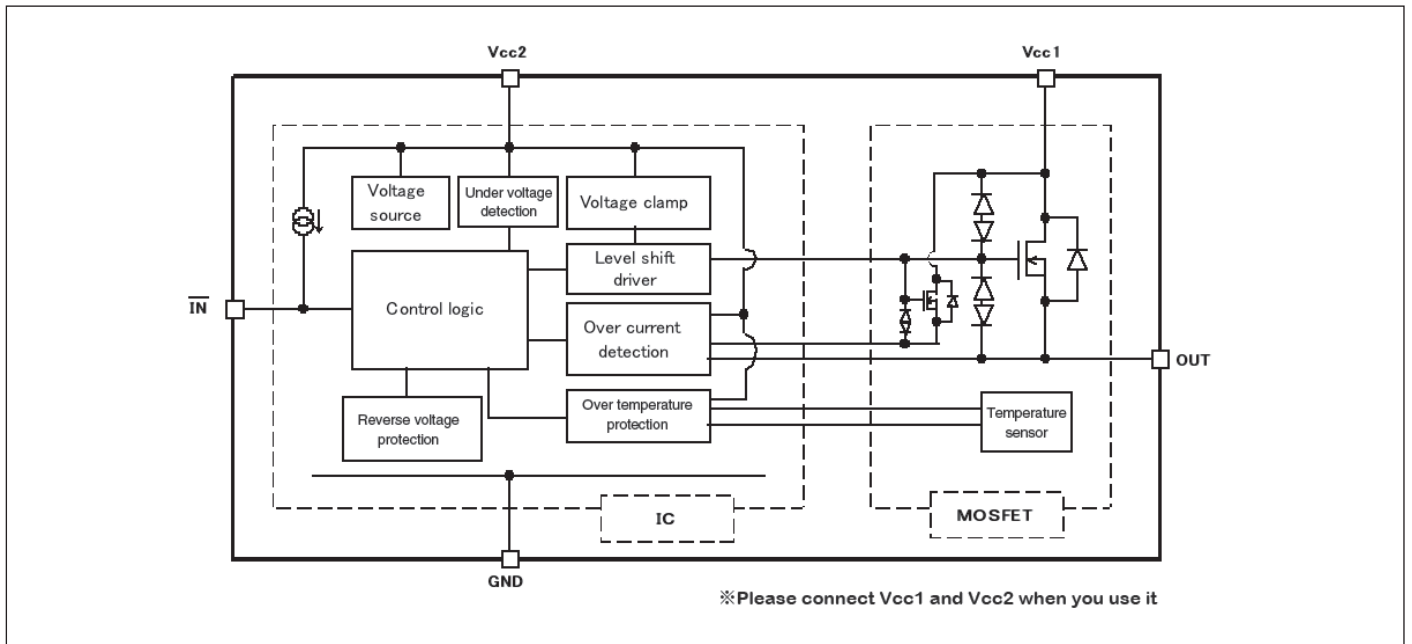
Thermal characteristics

Description	Symbol	Test conditions	min.	typ.	max.	Unit
Thermal resistance	R _{th(j-c)}	Junction - case	-	-	1.1	°C/W

■ Timing chart

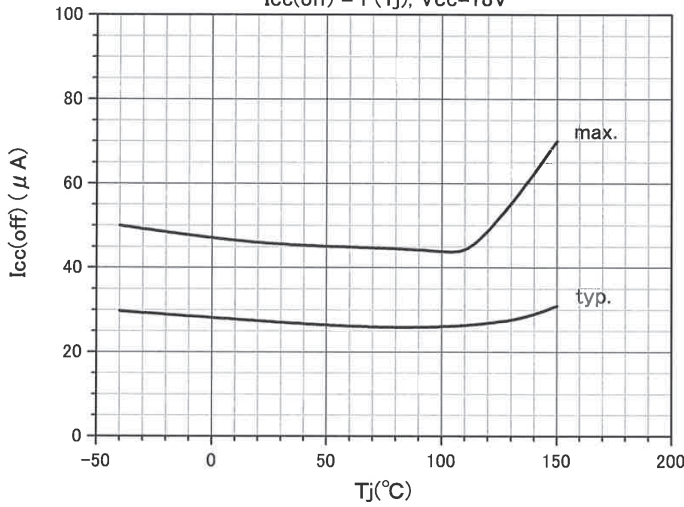


■ Circuit block diagram



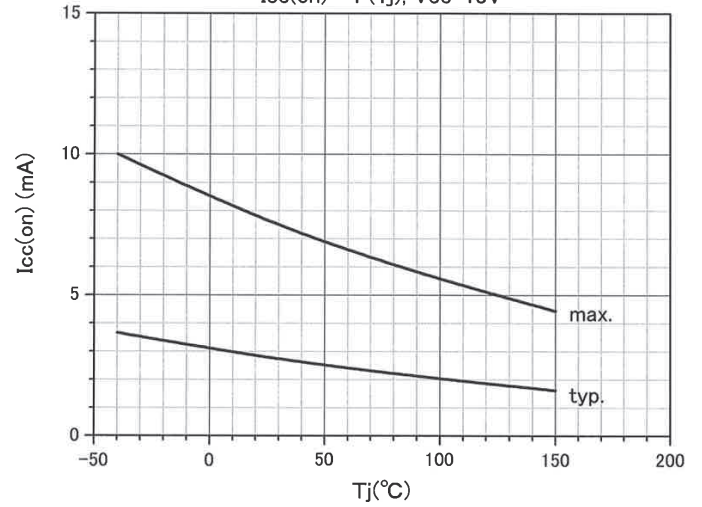
Standby current

$I_{cc(off)} = f(T_j), V_{cc}=18V$



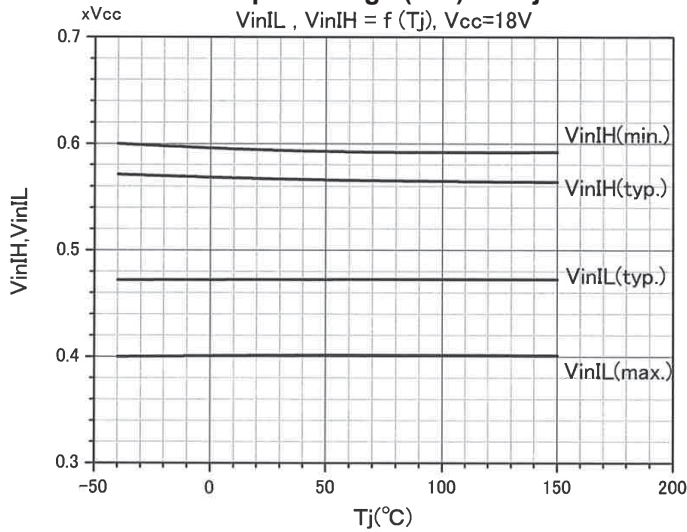
Operating current

$I_{cc(on)} = f(T_j), V_{cc}=18V$



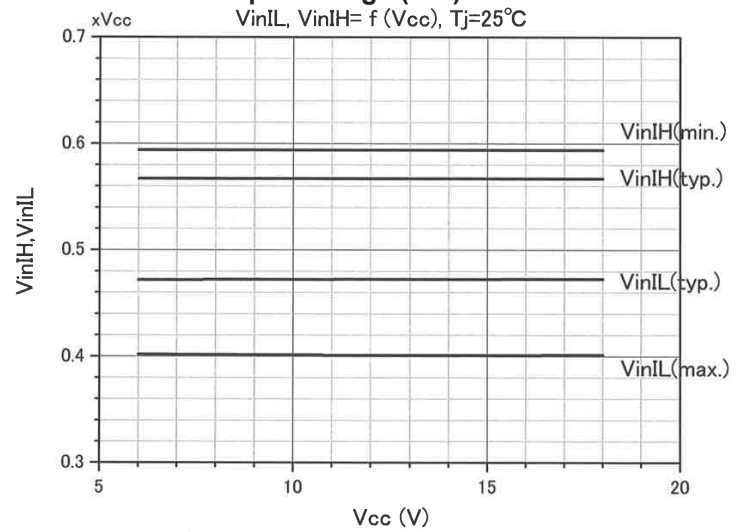
Input voltage (L/H) vs. Tj

$V_{inL}, V_{inH} = f(T_j), V_{cc}=18V$



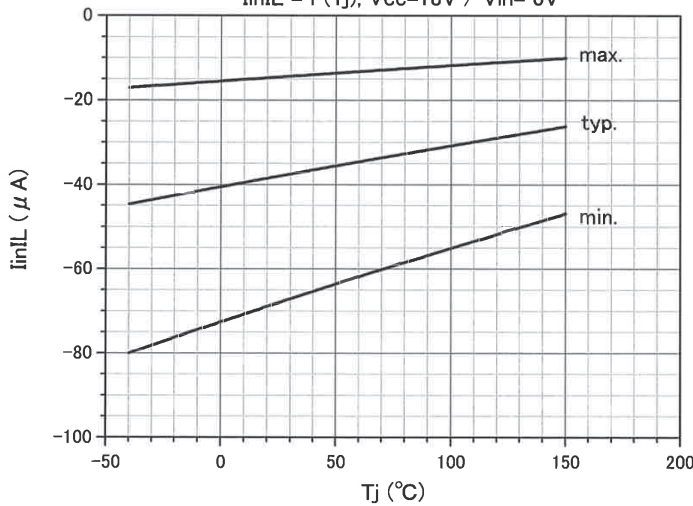
Input voltage (L/H) vs. Vcc

$V_{inL}, V_{inH} = f(V_{cc}), T_j=25°C$



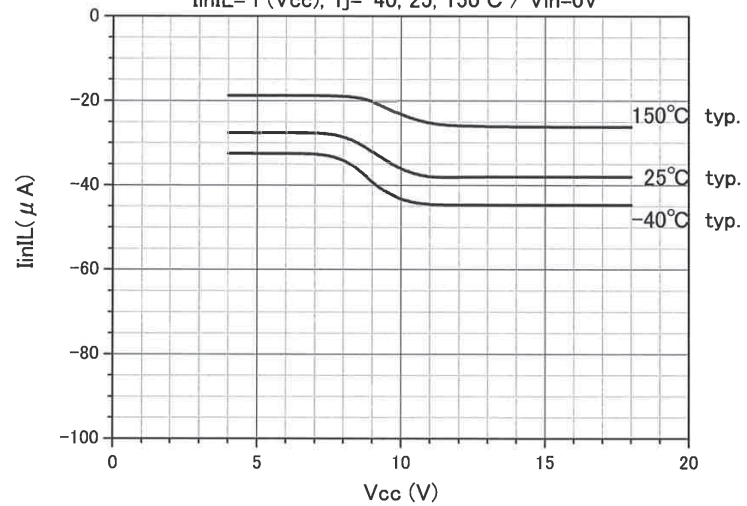
Input current (L) vs. Tj

$I_{inL} = f(T_j), V_{cc}=18V / V_{in}=0V$



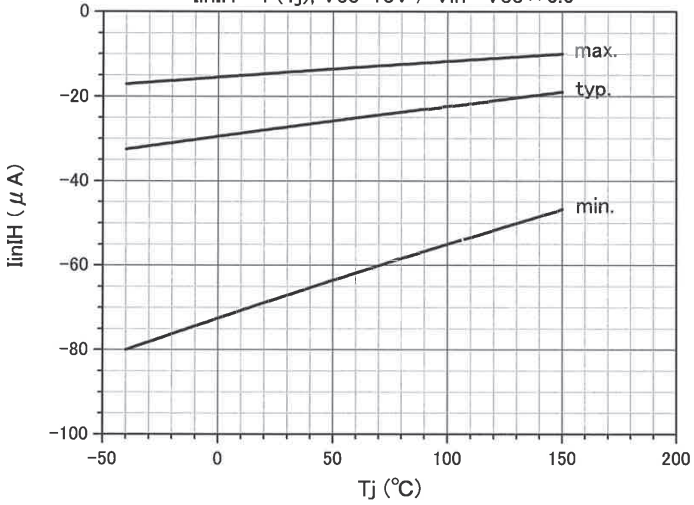
Input current (L) vs. Vcc

$I_{inL} = f(V_{cc}), T_j=-40, 25, 150°C / V_{in}=0V$



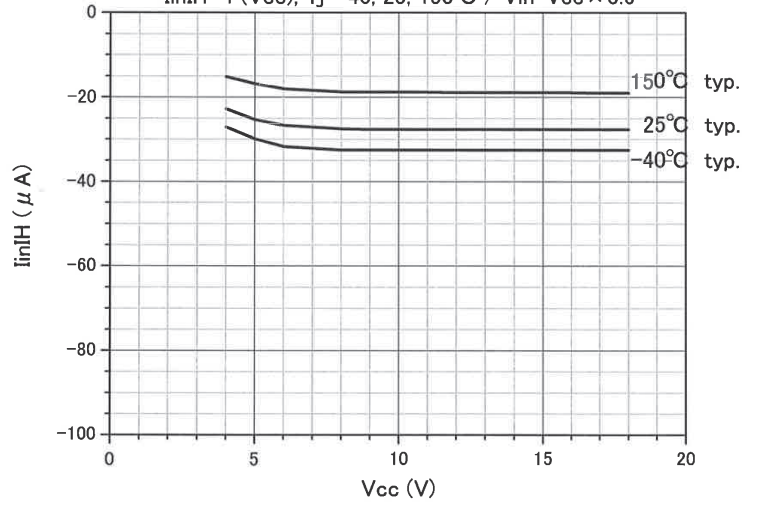
Input current (H) vs. Tj

$I_{inH} = f(T_j), V_{cc}=18V / V_{in}=V_{cc} \times 0.6$



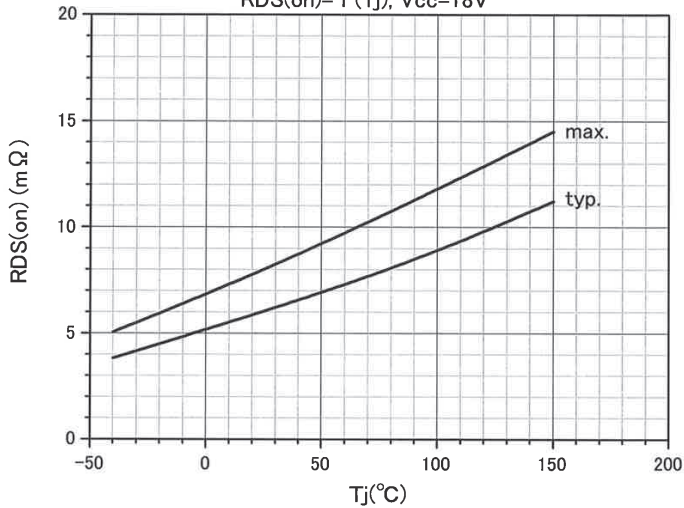
Input current (H) vs. Vcc

$I_{inH} = f(V_{cc}), T_j=-40, 25, 150^\circ C / V_{in}=V_{cc} \times 0.6$



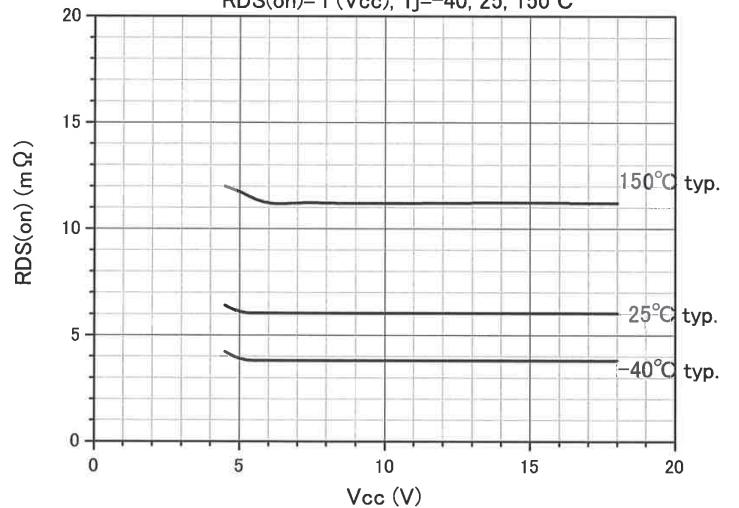
RDS(on) vs. Tj

$R_{DS(on)} = f(T_j), V_{cc}=18V$



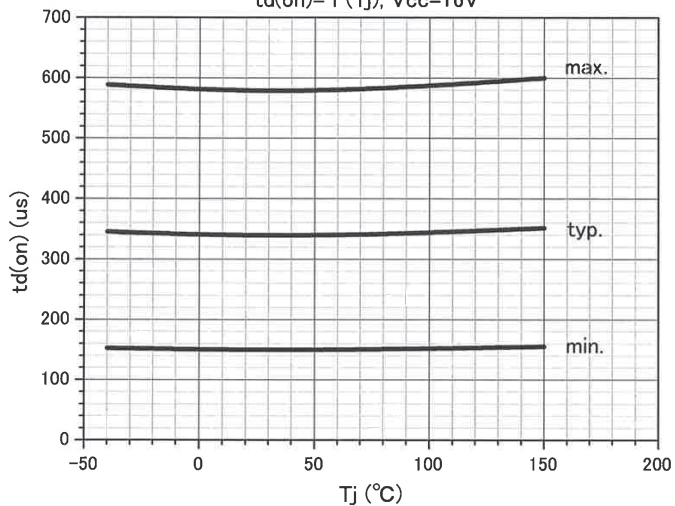
RDS(on) vs. Vcc

$R_{DS(on)} = f(V_{cc}), T_j=-40, 25, 150^\circ C$



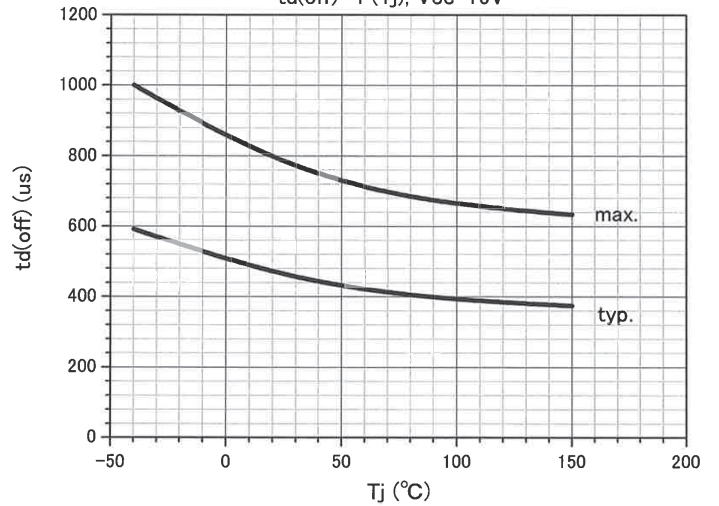
Turn-on Time

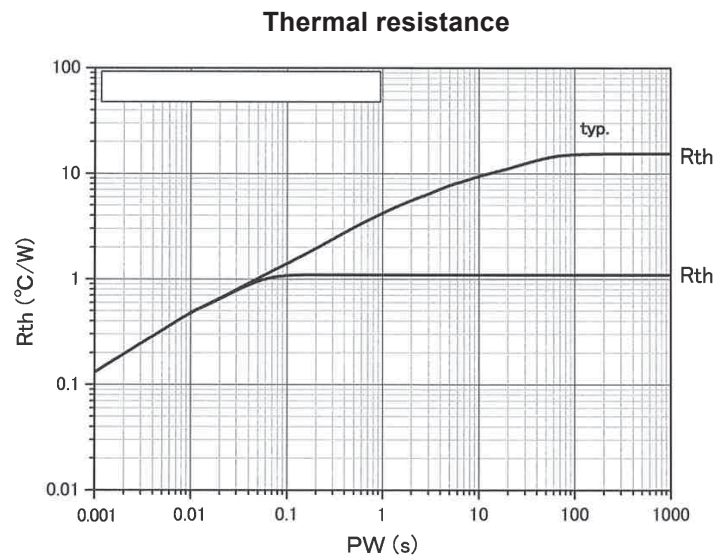
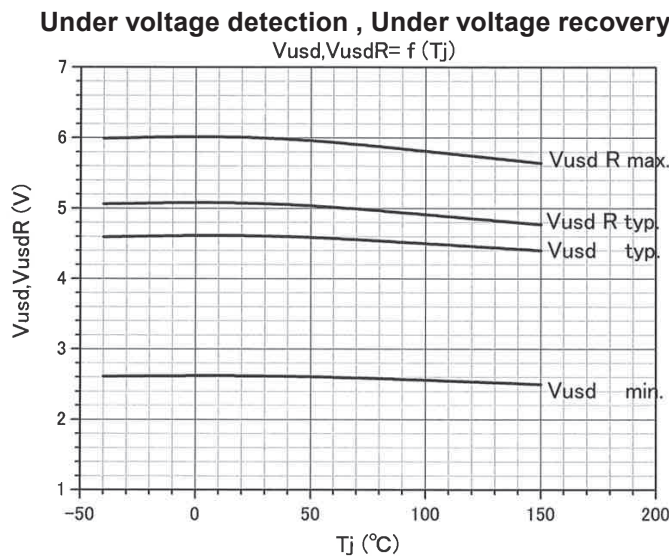
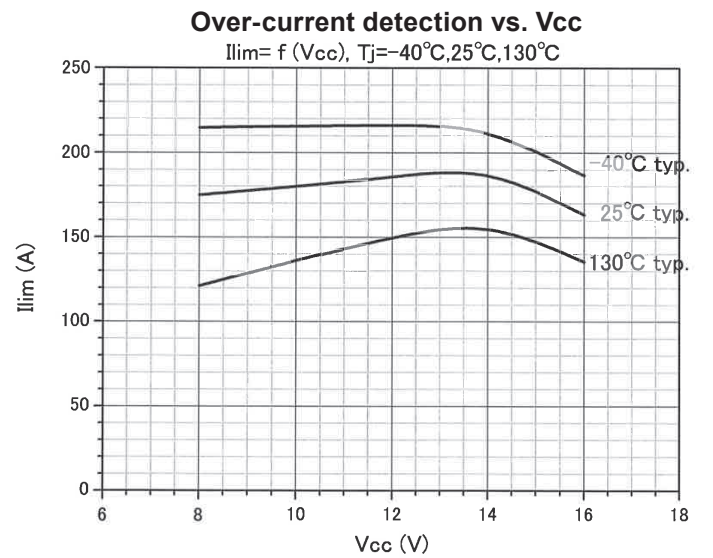
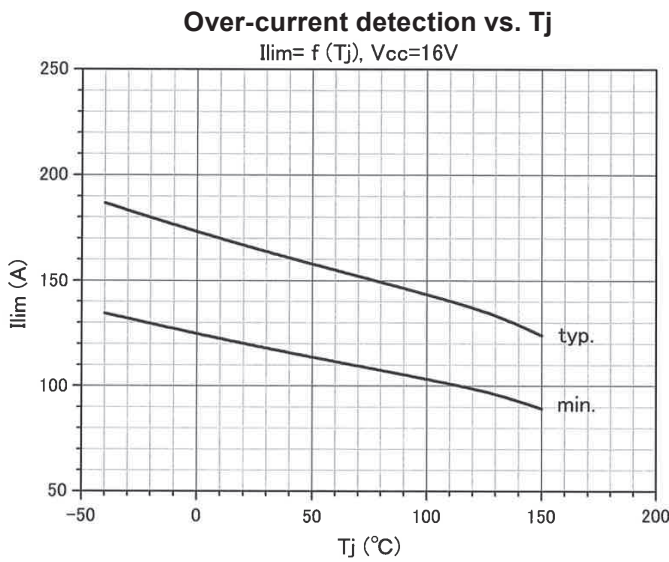
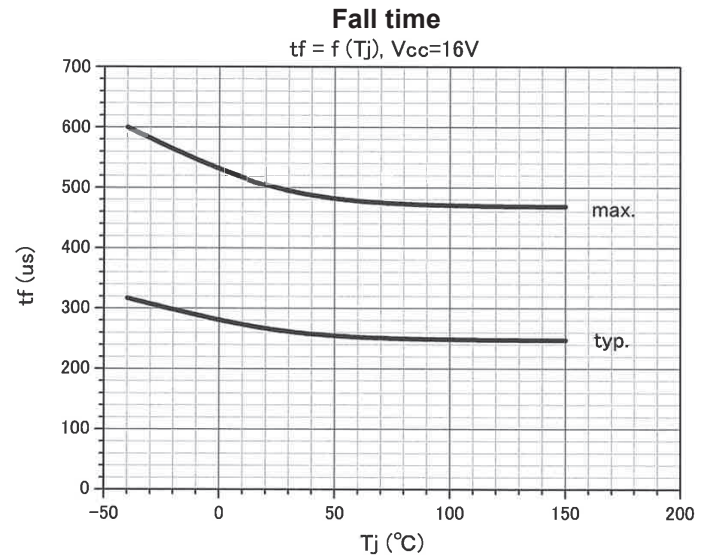
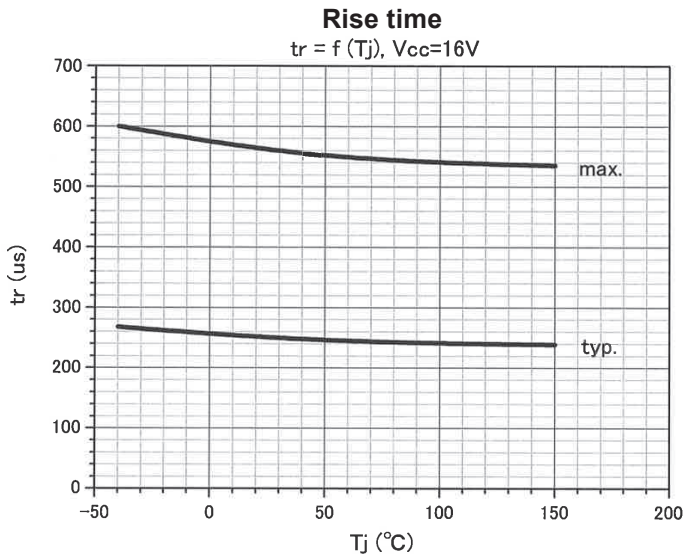
$t_{d(on)} = f(T_j), V_{cc}=16V$



Turn-off Time

$t_{d(off)} = f(T_j), V_{cc}=16V$





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