

Ordering number : ENN7274

N-Channel and P-Channel Silicon MOSFETs



**FW307**

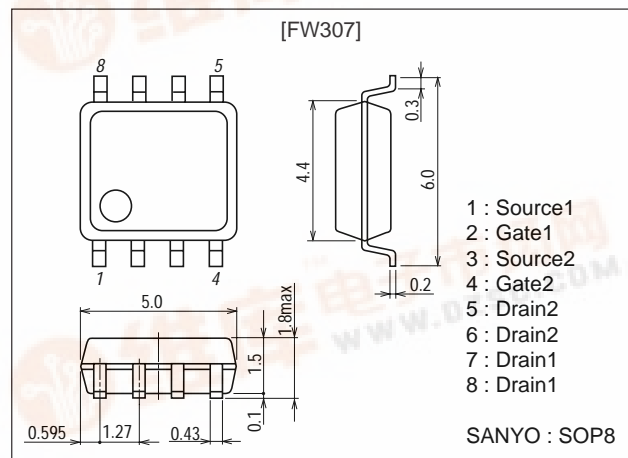
## Ultrahigh-Speed Switching Applications

### Features

- The FW307 incorporates an N-channel MOSFET and a P-channel MOSFET that feature low ON-resistance and high-speed switching, thereby enabling high-density mounting.
- Excellent ON-resistance characteristic.

### Package Dimensions

unit : mm  
2129



### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings		Unit
			N-channel	P-channel	
Drain-to-Source Voltage	V <sub>DSS</sub>		250	-250	V
Gate-to-Source Voltage	V <sub>GS</sub>		±30	±30	V
Drain Current (DC)	I <sub>D</sub>		1	-0.7	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	5	-3	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm²X0.8mm)1 unit		1.7	W
Total Dissipation	P <sub>T</sub>	Mounted on a ceramic board (900mm²X0.8mm)		2.0	W
Channel Temperature	T <sub>ch</sub>			150	°C
Storage Temperature	T <sub>stg</sub>			-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0	250			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =250V, V <sub>GS</sub> =0			100	μA
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0, Ta=0 to 60°C			4	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0			±10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±15V, V <sub>DS</sub> =0, Ta=0 to 60°C			±1.2	μA

Continued on next page.

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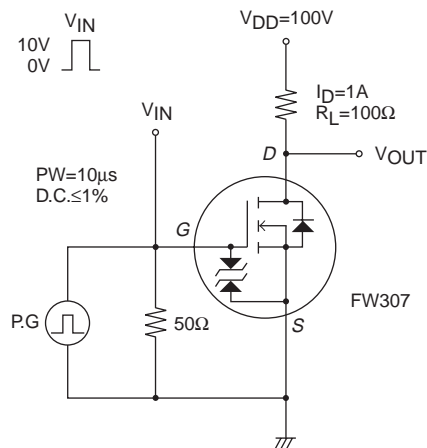
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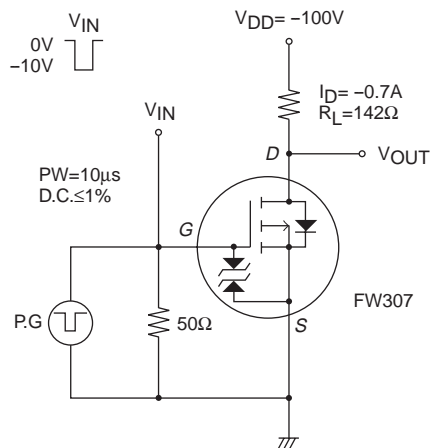
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.5		2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=1A$	1.4	2.1		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=1A, V_{GS}=10V$		1.2	1.6	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		160		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		40		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		15		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		10		ns
Rise Time	$t_r$	See specified Test Circuit.		15		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		80		ns
Fall Time	$t_f$	See specified Test Circuit.		30		ns
Diode Forward Voltage	$V_{SD}$	$I_S=1A, V_{GS}=0$		1.0	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-250			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-250V, V_{GS}=0$			-100	$\mu A$
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=15V, V_{GS}=0, T_a=0 \text{ to } 60^\circ C$			-4	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 25V, V_{DS}=0$			$\pm 10$	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 15V, V_{DS}=0, T_a=0 \text{ to } 60^\circ C$			$\pm 1.2$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.5		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-0.7A$	0.7	1.1		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=-0.7A, V_{GS}=-10V$		3	4	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, f=1MHz$		160		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-20V, f=1MHz$		45		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-20V, f=1MHz$		20		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		12		ns
Rise Time	$t_r$	See specified Test Circuit.		15		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		90		ns
Fall Time	$t_f$	See specified Test Circuit.		40		ns
Diode Forward Voltage	$V_{SD}$	$I_S=-1A, V_{GS}=0$		-1.0	-1.2	V

## Switching Time Test Circuit

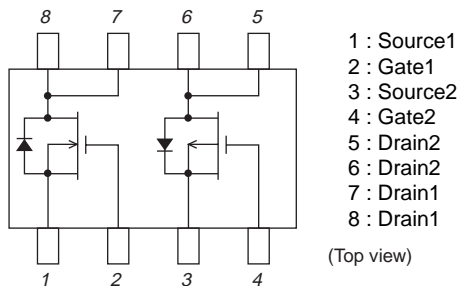
[N-channel]



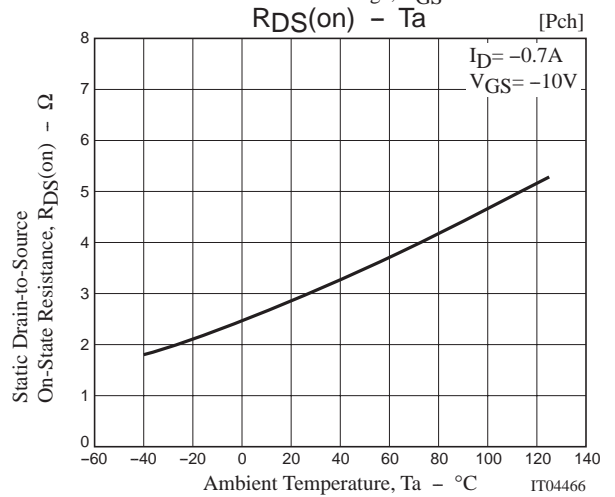
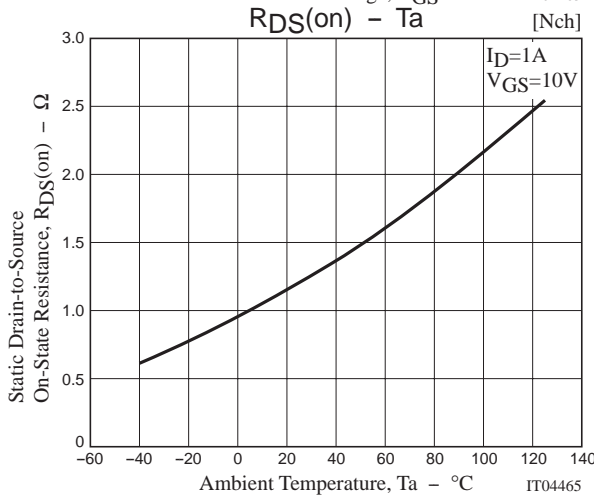
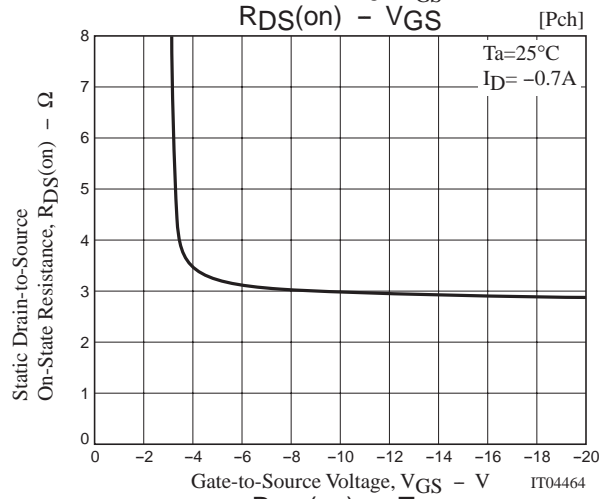
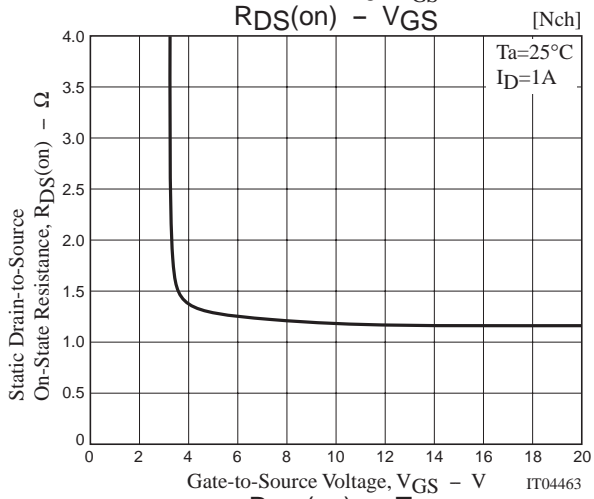
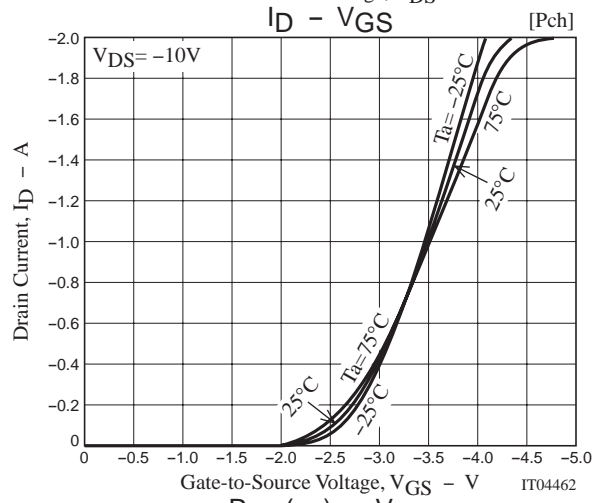
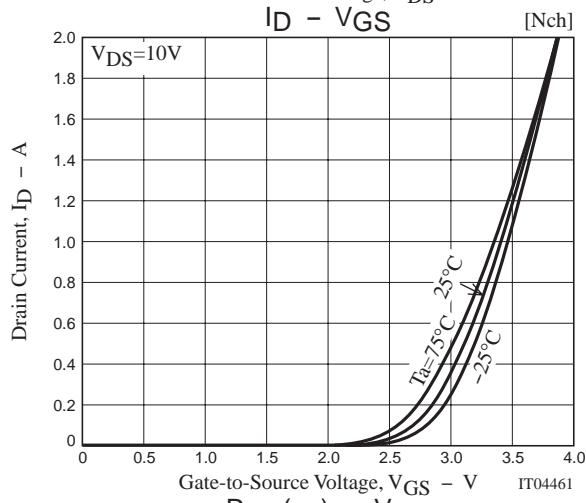
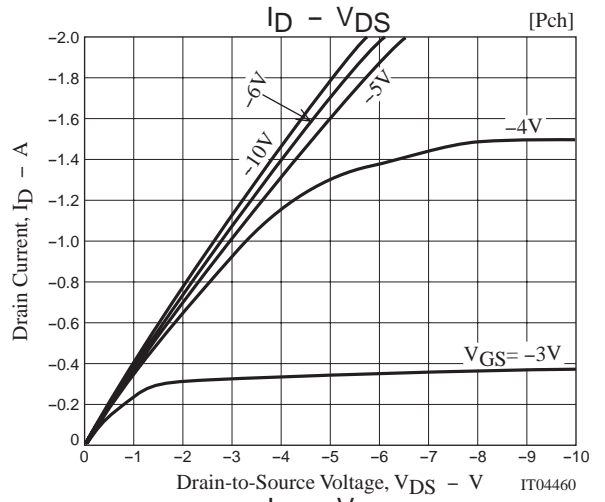
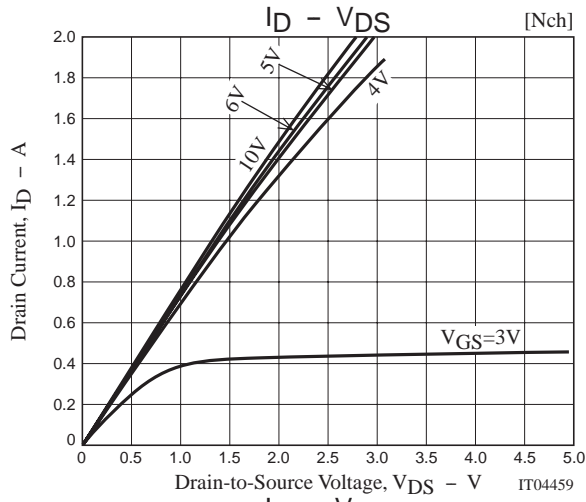
[P-channel]



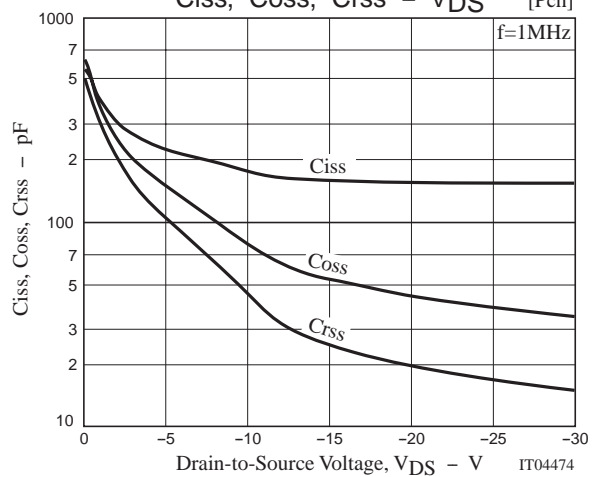
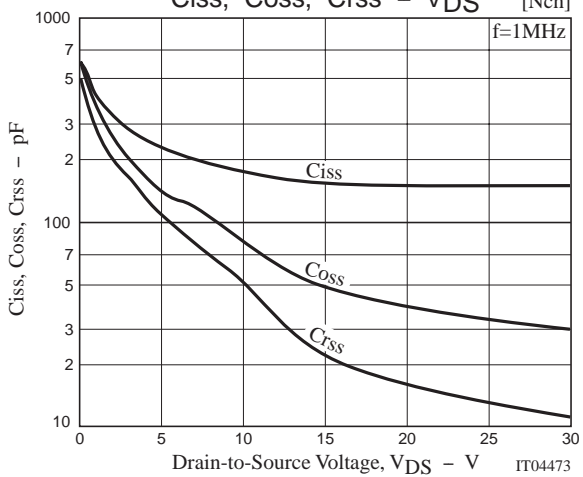
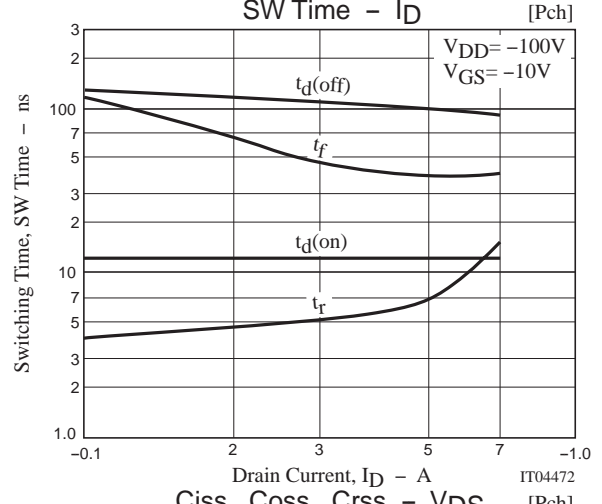
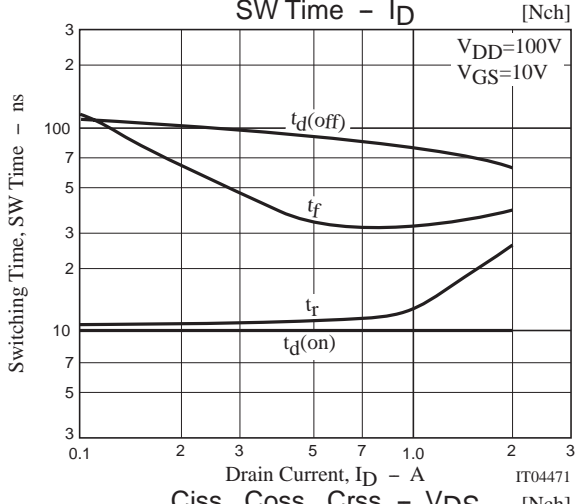
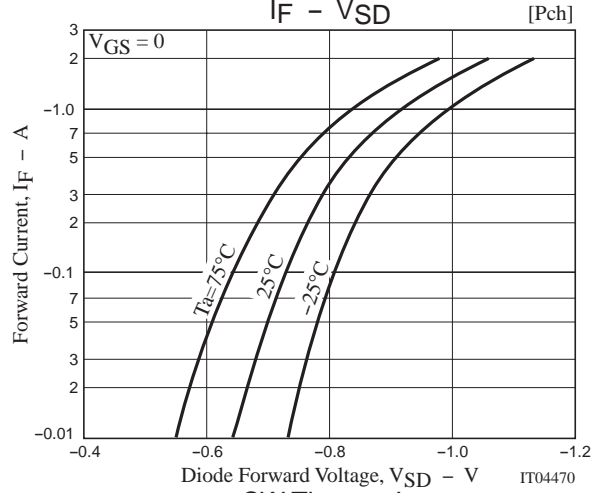
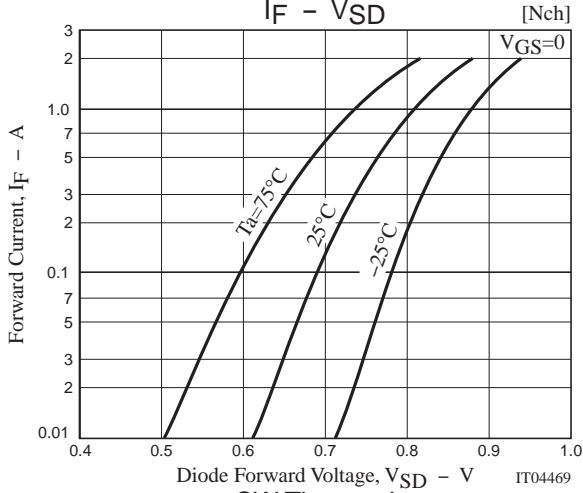
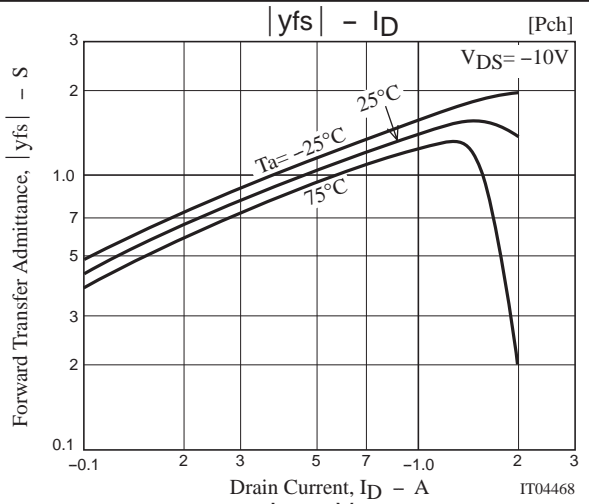
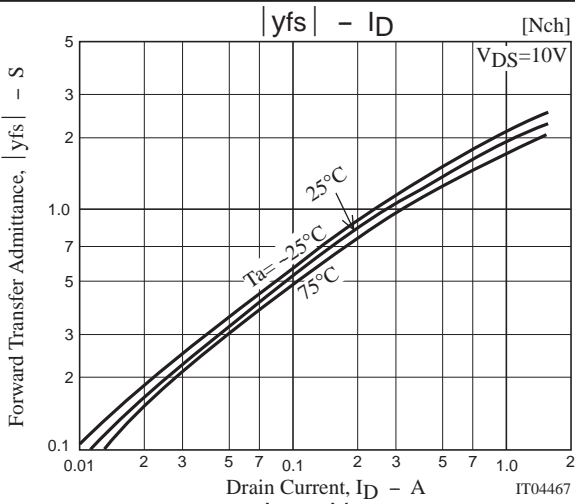
## Electrical Connection



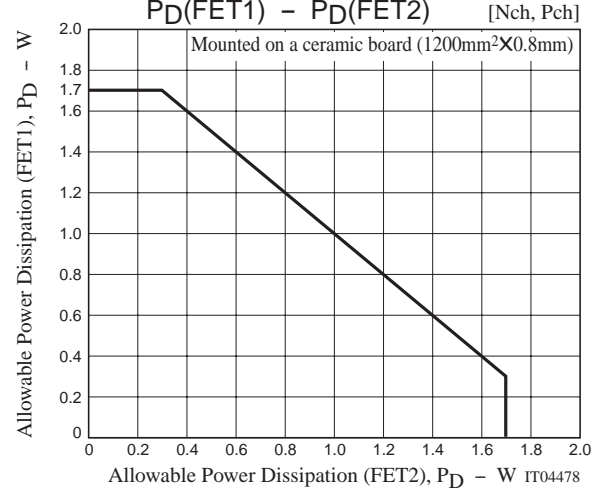
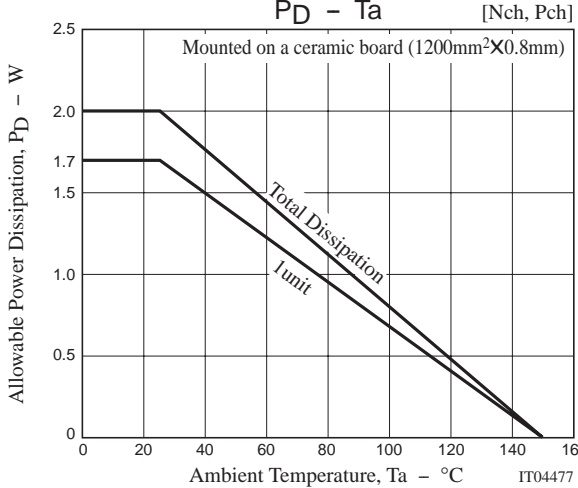
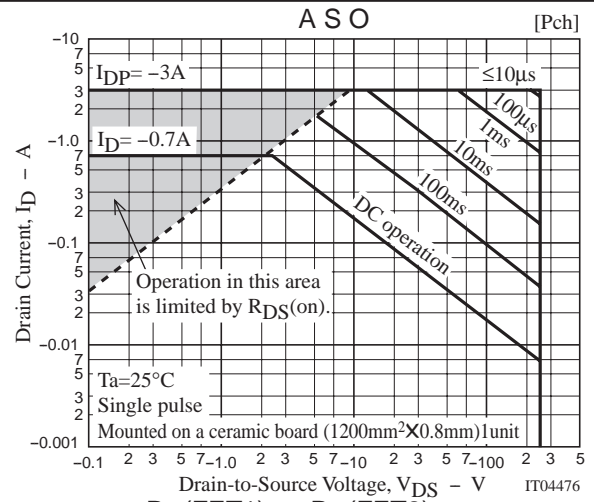
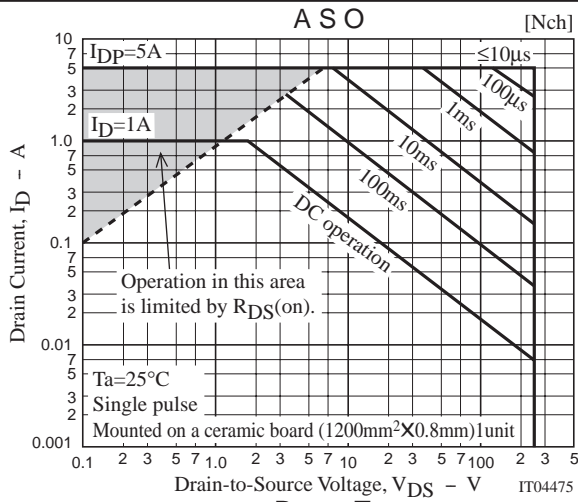
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