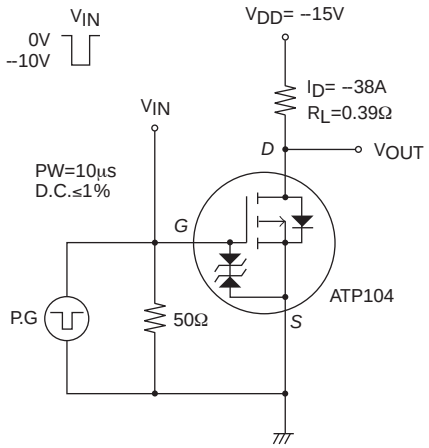
Electrical Characteristics at Ta=25°C

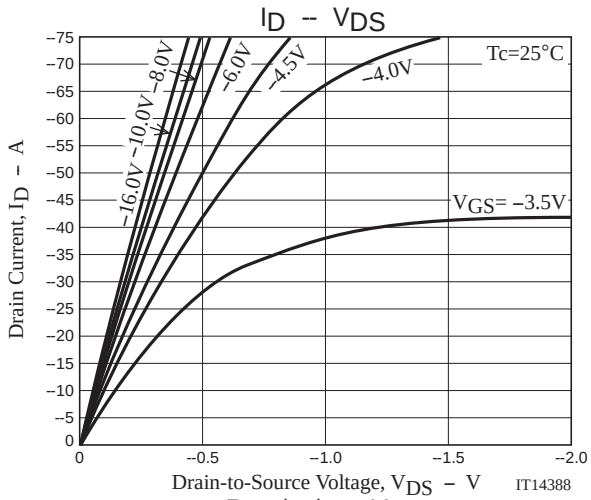
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−30V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−38A		70		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−38A, V_{GS}=−10V		6.4	8.4	mΩ
	R_{DS}(on)2	I_D=−19A, V_{GS}=−4.5V		9.6	13.5	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		3950		pF
Output Capacitance	Coss			880		pF
Reverse Transfer Capacitance	Crss			610		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		24		ns
Rise Time	t_r			520		ns
Turn-OFF Delay Time	t_d(off)			290		ns
Fall Time	t_f			260		ns
Total Gate Charge	Qg	V_{DS}=−15V, V_{GS}=−10V, I_D=−75A		76		nC
Gate-to-Source Charge	Qgs			18		nC
Gate-to-Drain “Miller” Charge	Qgd			13		nC
Diode Forward Voltage	V_{SD}	I_S=−75A, V_{GS}=0V		−1.02	−1.5	V

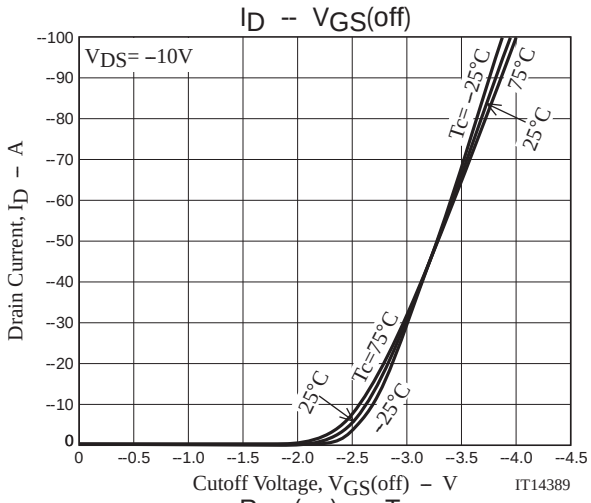
Switching Time Test Circuit

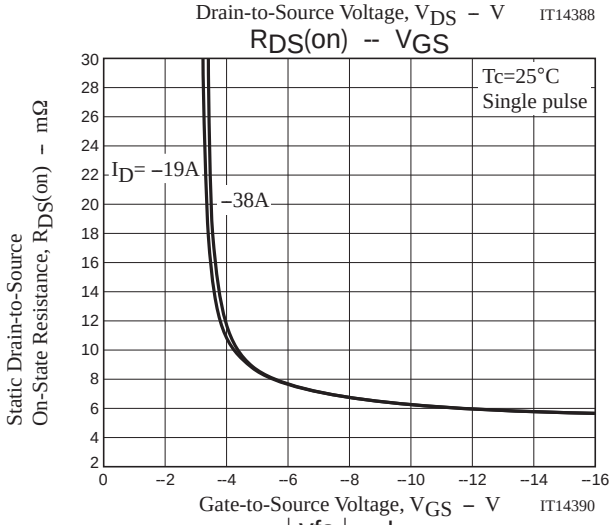


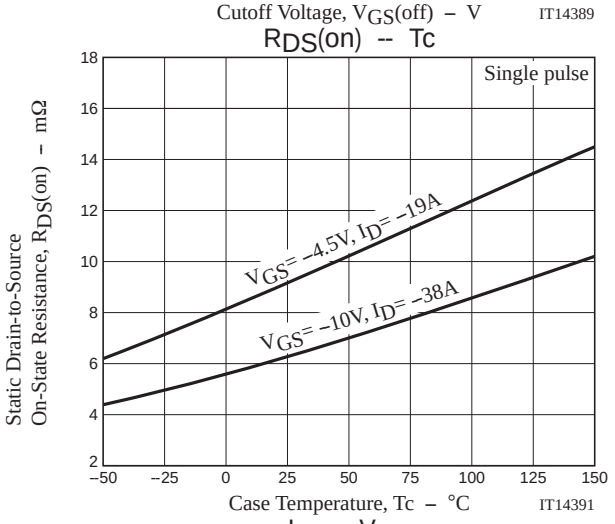
Ordering Information

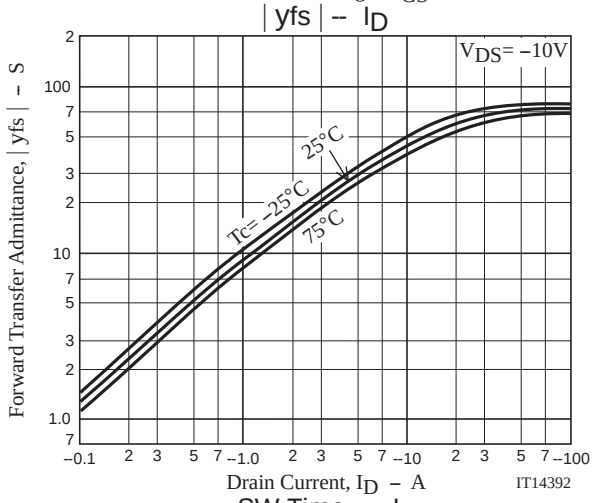
Device	Package	Shipping	memo
ATP104-TL-H	ATPAK	3,000pcs./reel	Pb Free and Halogen Free

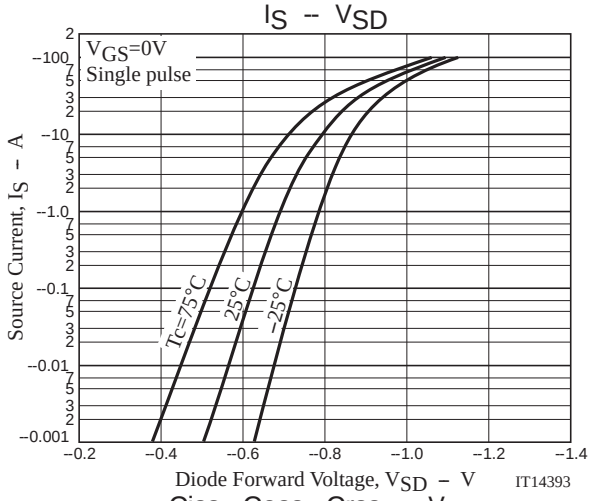


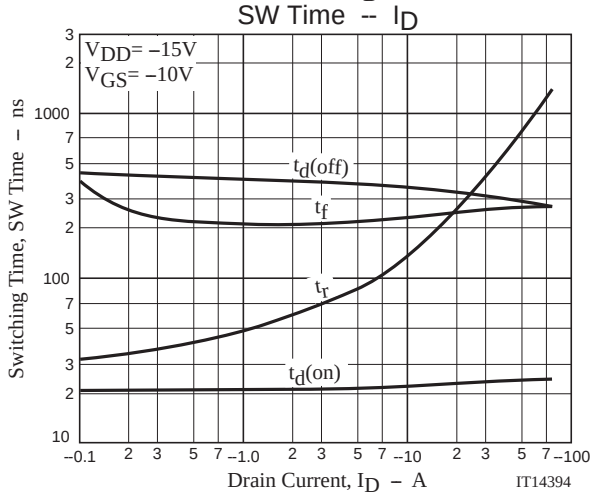


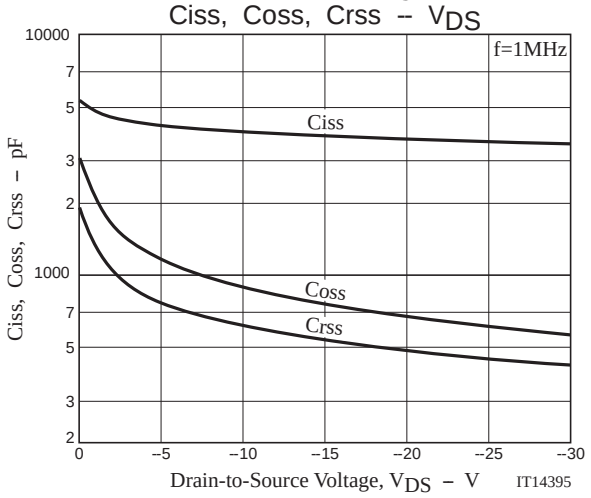


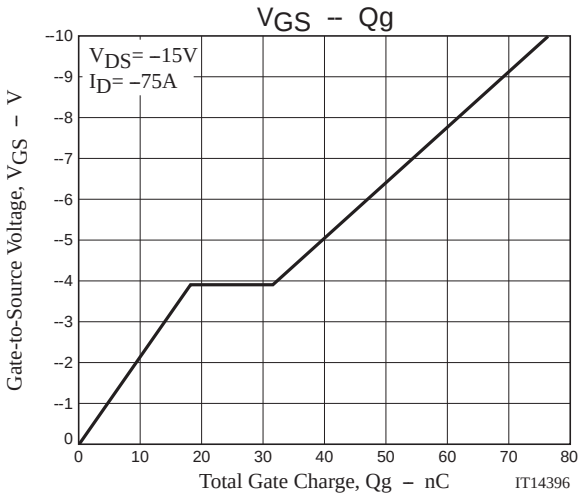


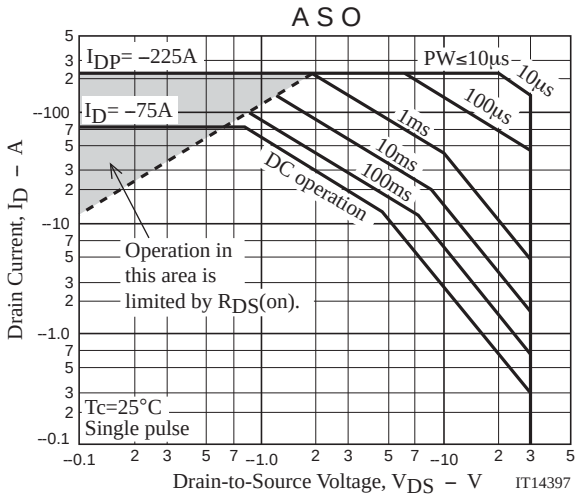


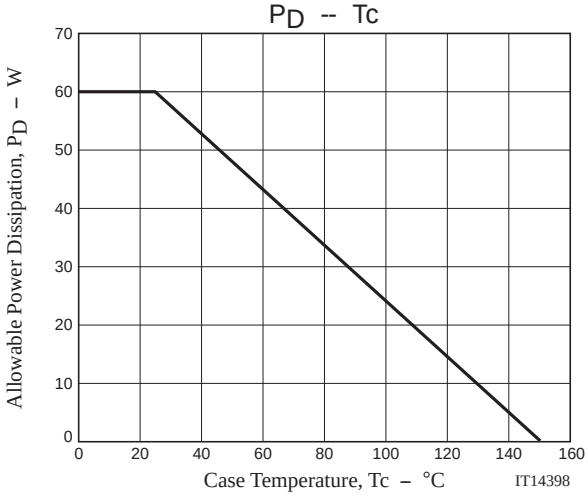


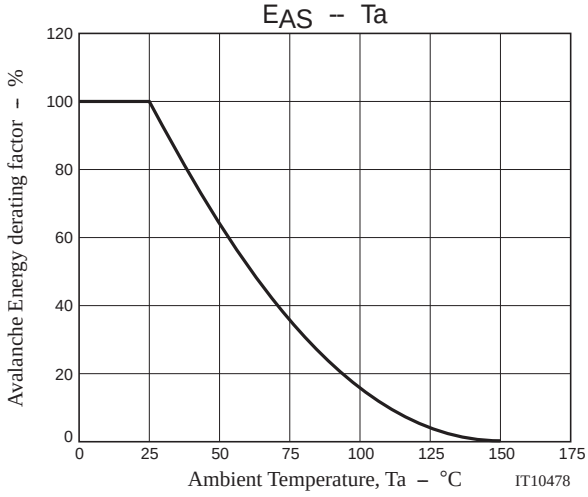












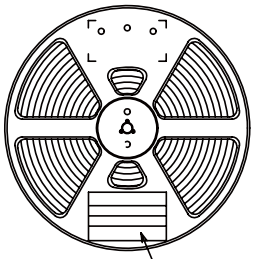
Taping Specification

ATP104-TL-H

1. Packing Format (TL)

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	INNER BOX SD-C-18	OUTER BOX SD-A-18
ATPAK	ATP	3,000	3,000	15,000	1 reels contained Dimensions:mm (external) 340×340×28	5 inner boxes contained Dimensions:mm (external) 355×355×165

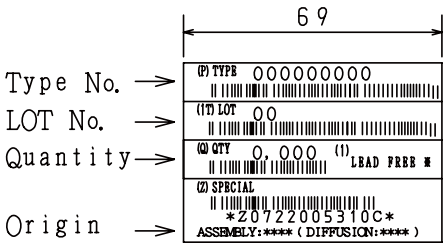
Packing method



Reel label

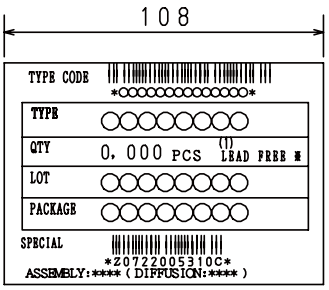
Reel label, Inner box label

(unit:mm)



Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



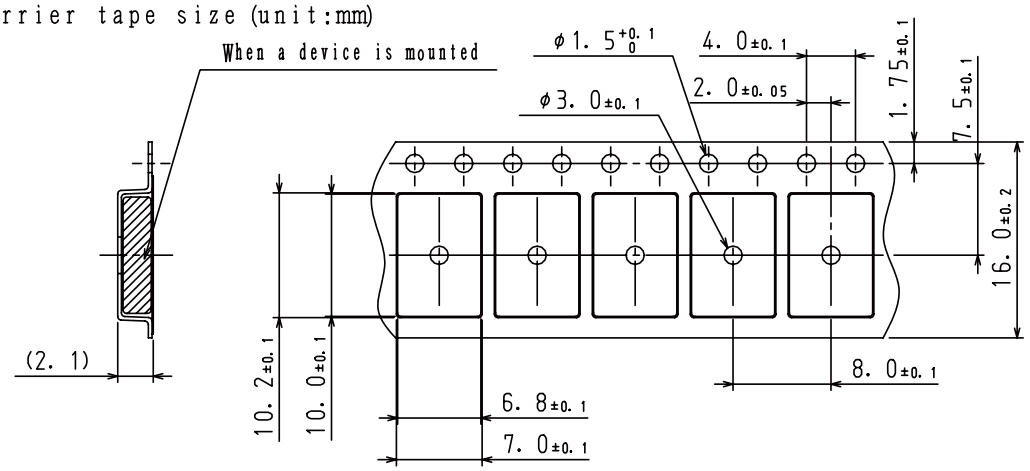
NOTE (1)

The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

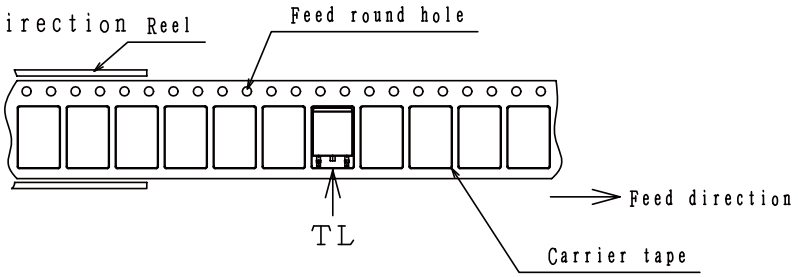
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



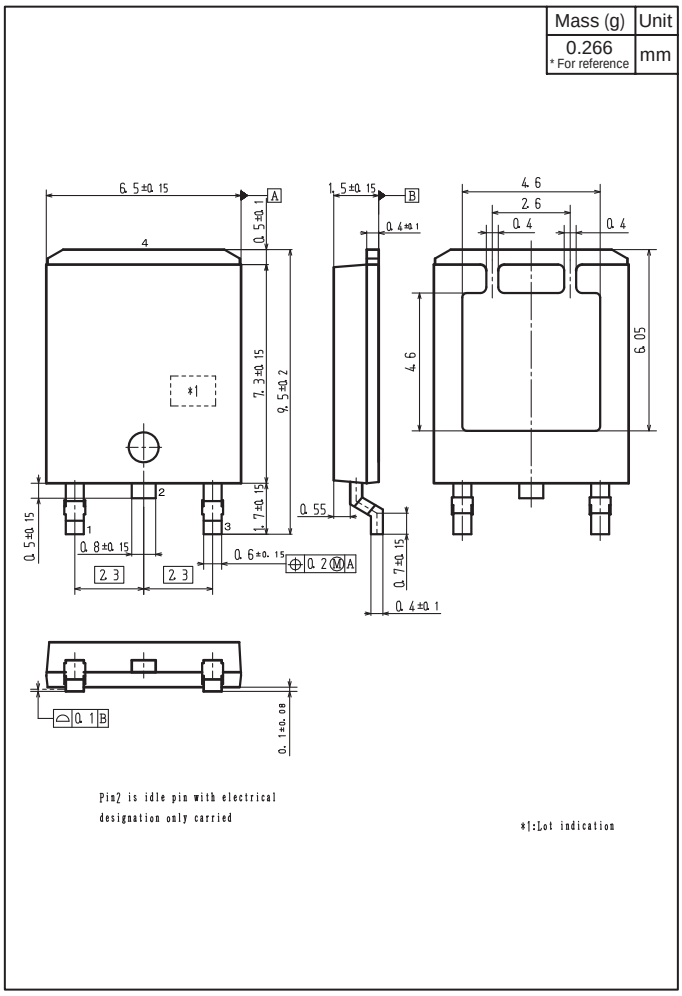
2-2. Device placement direction



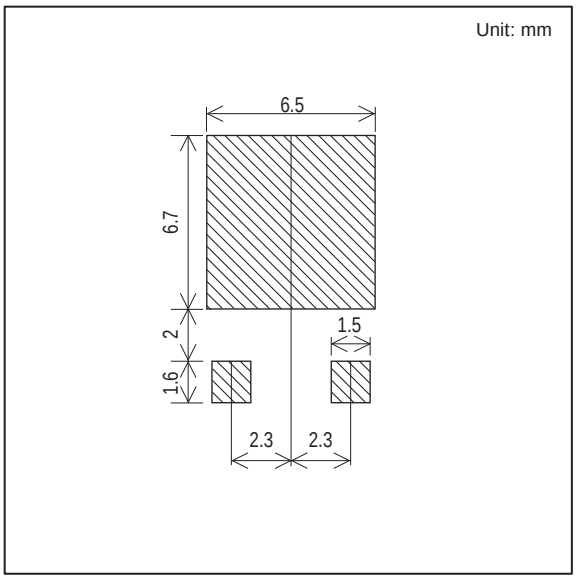
The one erectrode terminals on feed hole side····TL

Outline Drawing

ATP104-TL-H



Land Pattern Example



Note on usage : Since the ATP104 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.