



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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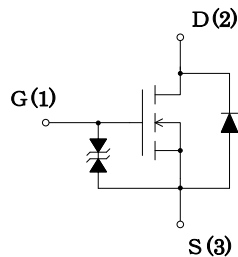
Features

- Low on-state resistance 5.0mΩ VGS=10V
- Built-in gate protection diode
- SMD PKG

Applications

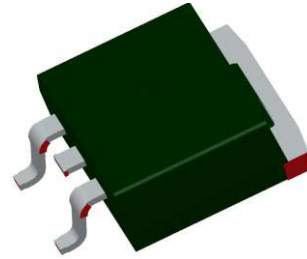
- DC-DC converter
- Mortar drive

Internal Equivalent Circuit



Package

TO220S



Key Specifications

- V(BR)DSS = 60V (ID=100uA)
- RDS(ON) = 5mΩ max (ID=35A / VGS=10V)

Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Rating	Unit
Drain to Source Voltage	V _{DSS}	60	V
Gate to Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	±85	A
Pulsed Drain Current	I _{D(pulse)} *1	±170	A
Maximum Power Dissipation	P _D	100 (Tc=25°C)	W
Single Pulse Avalanche Energy	E _{AS} *2	400	mJ
Maximum avalanche current	I _{AS}	25	A
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 ~ +150	°C
Maximum Drain to Source dv/dt 1	dv/dt 1 *2	0.5	V/ns
Peak diode recovery dv/dt 2	dv/dt 2 *3	3	V/ns
Peak diode recovery di/dt	di/dt *3	100	A/μs

*1 PW≤100μsec. duty cycle≤1%

*2 V_{DD}=20V, L=1mH, I_L=25A, unclamped, R_g=50Ω, See Fig.1

*3 I_{SD}=25A, See Fig.2

Electrical characteristics

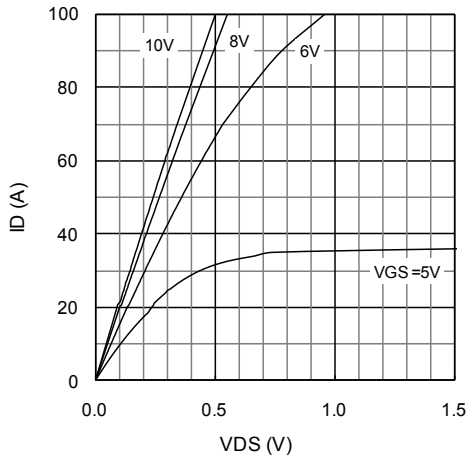
(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			Unit
			MIN	TYP	MAX	
Drain to Source breakdown Voltage	$V_{(BR)DSS}$	$I_D=100\mu A$ $V_{GS}=0V$	60			V
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 15V$			± 10	μA
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=60V$ $V_{GS}=0V$			100	μA
Gate Threshold Voltage	V_{TH}	$V_{DS}=10V$, $I_D=1mA$	2.0	3.4	4.0	V
Forward Transconductance	$Re(yfs)$	$V_{DS}=10V$ $I_D=35A$	30	80		S
Static Drain to Source On-Resistance	$R_{DS(ON)}$	$I_D=35A$, $V_{GS}=10V$		5.0	6.0	m Ω
Input Capacitance	C_{iss}	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$		8400		pF
Output Capacitance	C_{oss}			1200		
Reverse Transfer Capacitance	C_{rss}			930		
Turn-On Delay Time	$t_{d(on)}$	$I_D=35A$ $V_{DD}=20V$ $R_G=22\Omega$ $R_{GS}=50\Omega$ $R_L=0.57\Omega$ $V_{GS}=10V$ See Fig.3		160		ns
Rise Time	t_r			170		
Turn-Off Delay Time	$t_{d(off)}$			430		
Fall Time	t_f			185		
Source-Drain Diode Forward Voltage	V_{SD}	$I_{SD}=50A$ $V_{GS}=0V$		0.9	1.5	V
Source-Drain Diode Reverse Recovery Time	t_{rr}	$I_{SD}=25A$ $di/dt=50A/\mu s$		65		ns
Thermal Resistance Junction to Case	$R_{th(ch-c)}$				1.25	$^{\circ}C/W$
Thermal Resistance Junction to Ambient	$R_{th(ch-a)}$				62.5	$^{\circ}C/W$

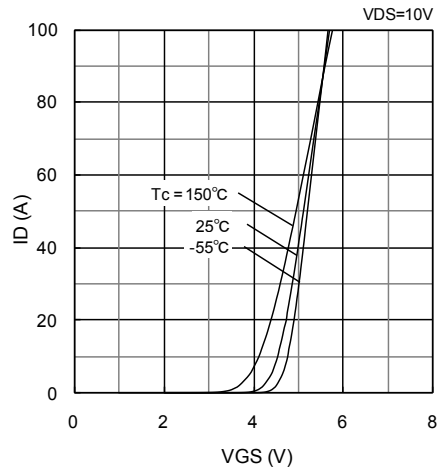
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Characteristic Curves (Tc=25°C)

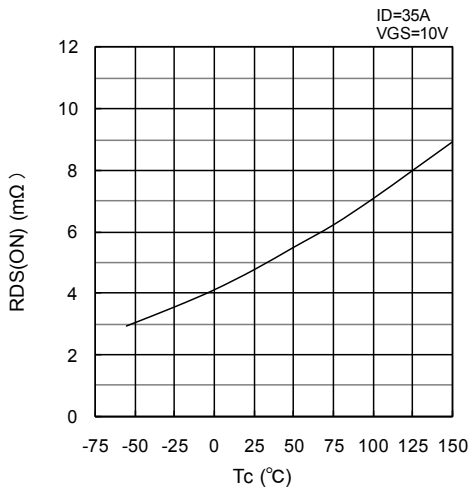
ID-VDS characteristics (typical)



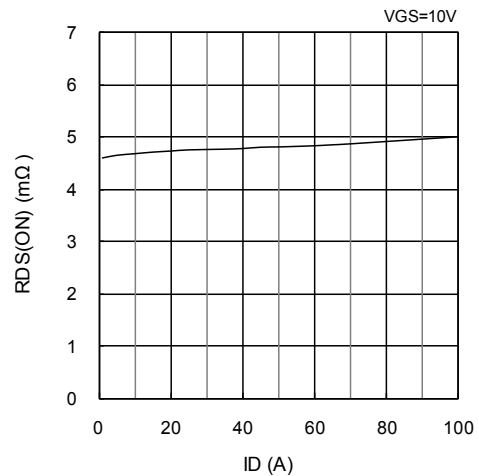
ID-VGS characteristics (typical)



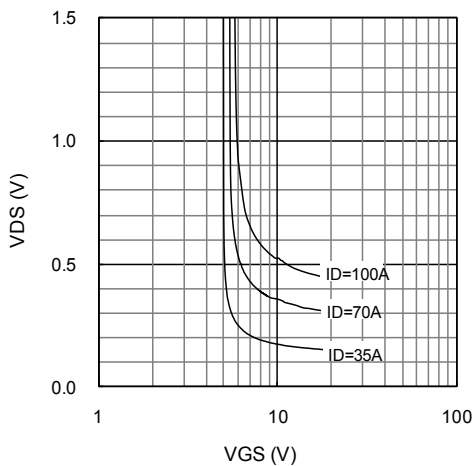
RDS(ON)-Tc characteristics (typical)



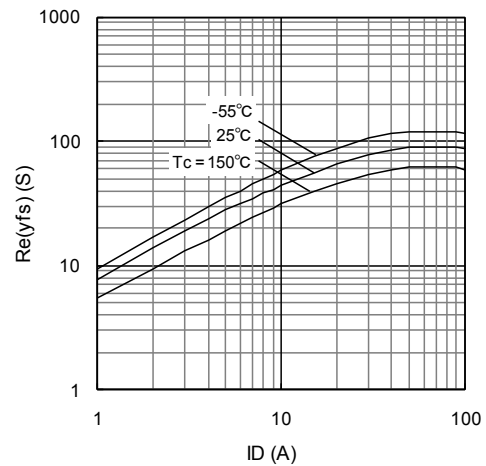
RDS(ON)-ID characteristics (typical)



VDS-VGS characteristics (typical)

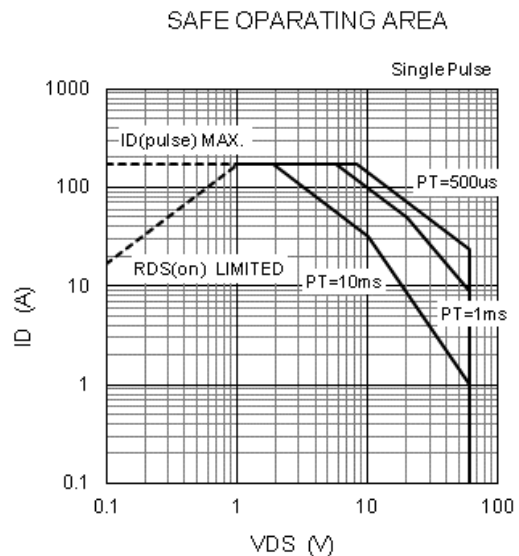
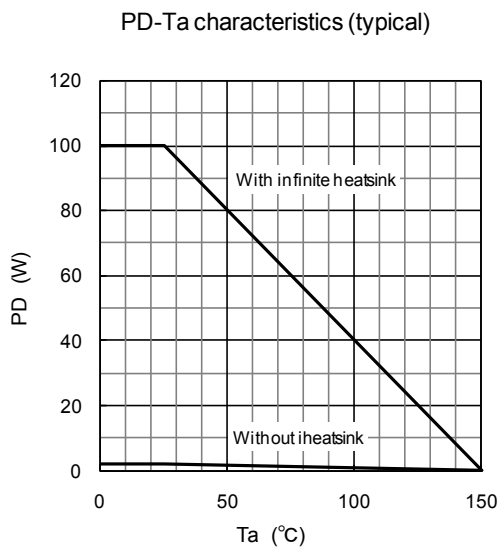
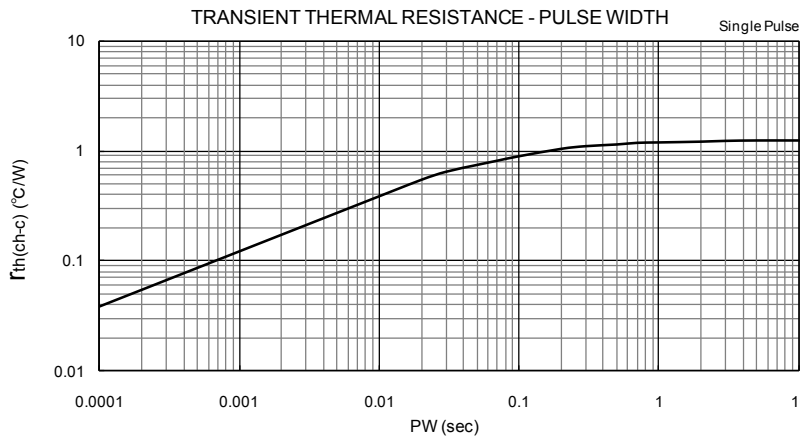
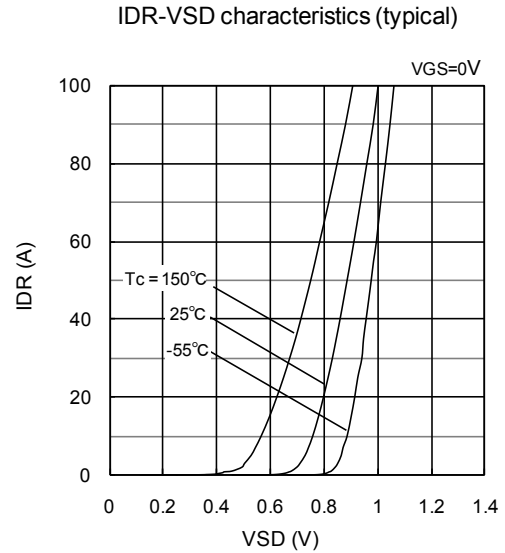
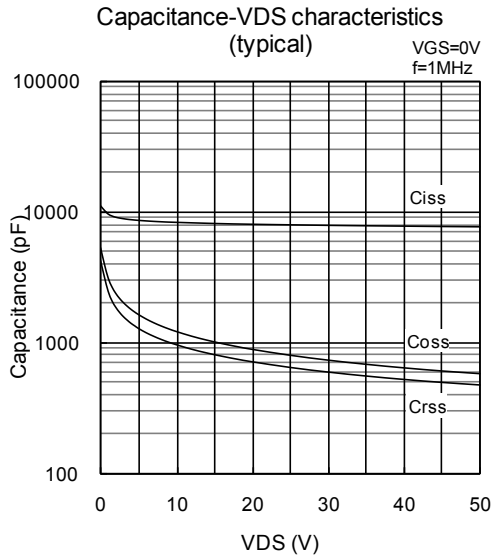


Re(yfs)-ID characteristics (typical)



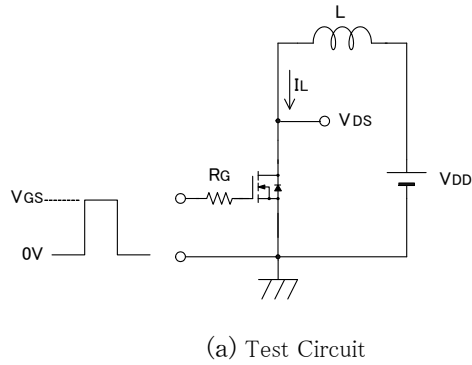
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Characteristic Curves (Tc=25°C)



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Fig.1 Unclamped Inductive Test Method



$$EAS = \frac{1}{2} \cdot L \cdot I_{LP}^2 \cdot \frac{V_{(BR)DSS}}{V_{(BR)DSS} - V_{DD}}$$

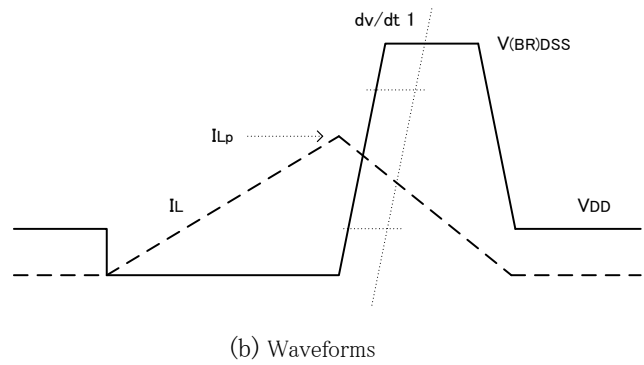


Fig.2 Diode Reverse Recovery Time Test Method

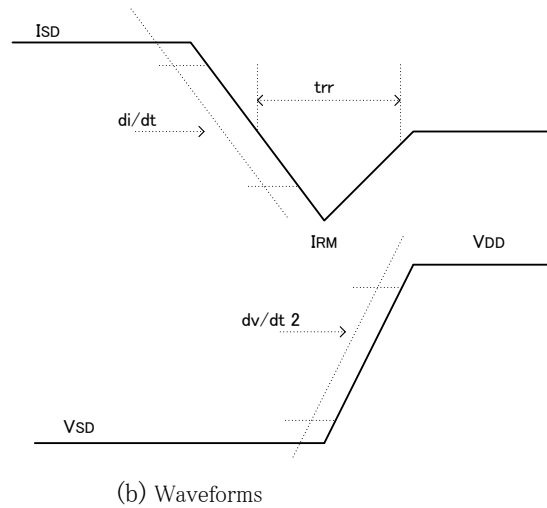
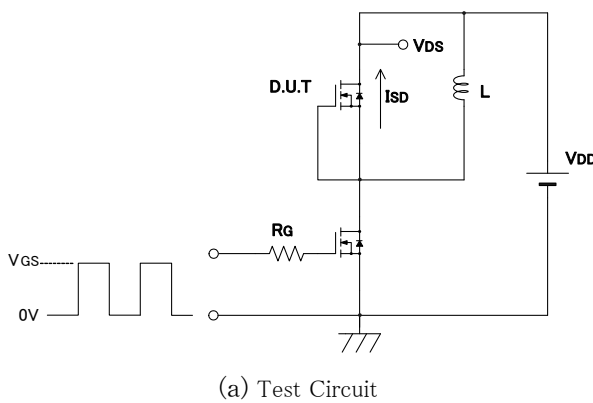
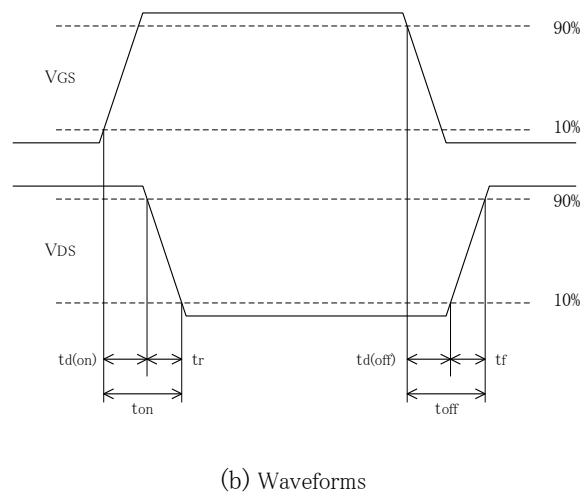
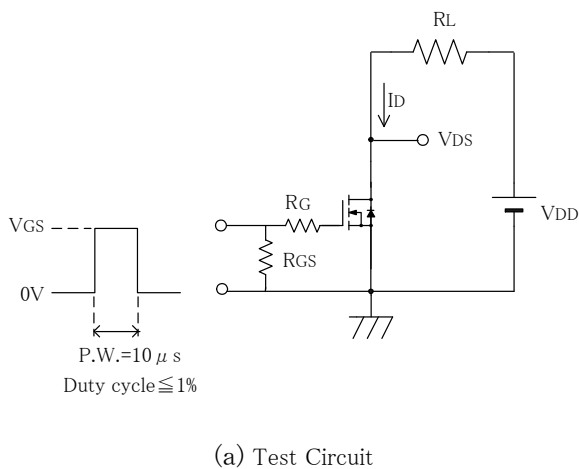


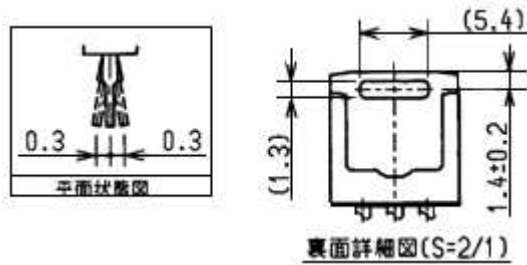
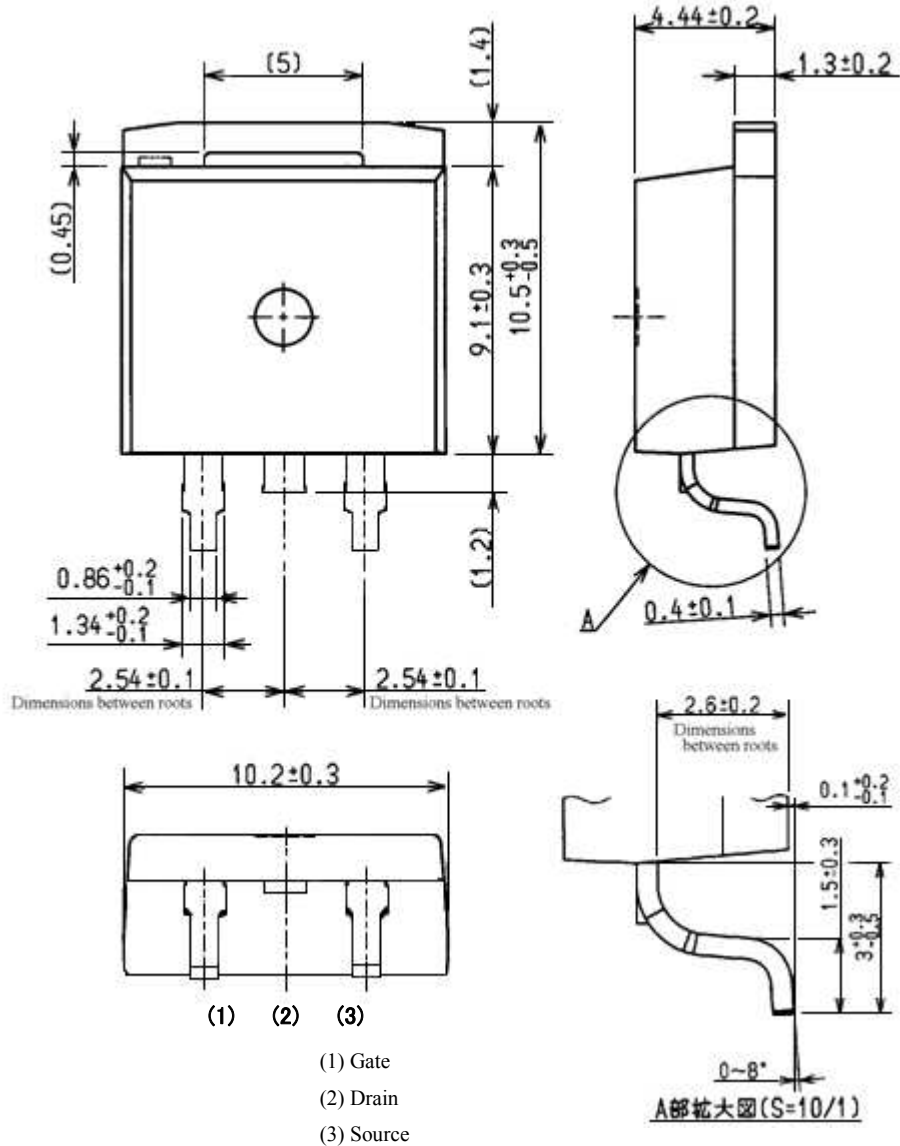
Fig.3 Switching Time Test Method



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Outline

TO220S



Weight Approx. 1.4g

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