



VEC2616

Power MOSFET

60V, 3A, 80mΩ, -60V, -2.5A, 137mΩ, Complementary Dual VEC8

ON Semiconductor®

<http://onsemi.com>

Features

- ON-resistance Nch: $R_{DS(on)1}=62m\Omega(\text{typ.})$, Pch: $R_{DS(on)1}=105m\Omega(\text{typ.})$
- 4V drive
- N-channel MOSFET + P-channel MOSFET
- Halogen free compliance
- Protection diode in

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

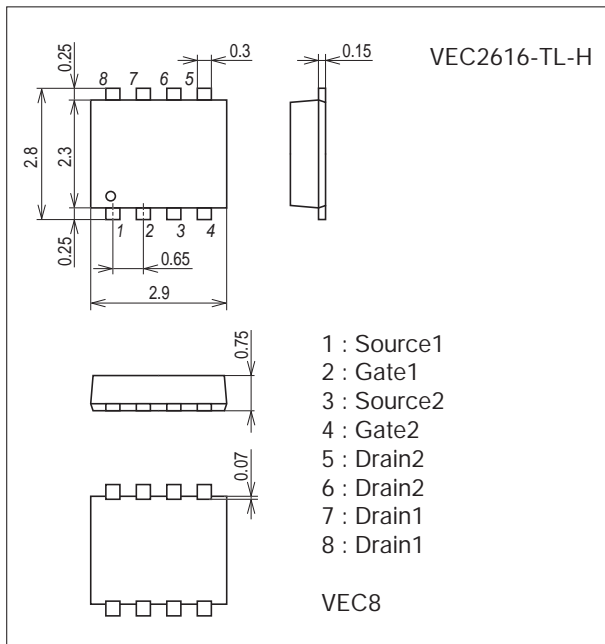
Parameter	Symbol	Conditions	N-channel	P-channel	Unit
Drain-to-Source Voltage	V_{DSS}		60	-60	V
Gate-to-Source Voltage	V_{GSS}		± 20	± 20	V
Drain Current (DC)	I_D		3	-2.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	12	-10	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (900mm ² ×0.8mm) 1unit	0.9		W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm ² ×0.8mm)	1.0		W
Channel Temperature	T_{ch}		150		°C
Storage Temperature	T_{stg}		-55 to +150		°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

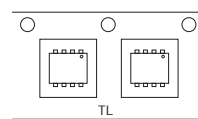
7012-002



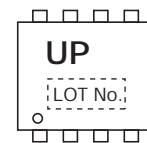
Product & Package Information

- Package : VEC8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

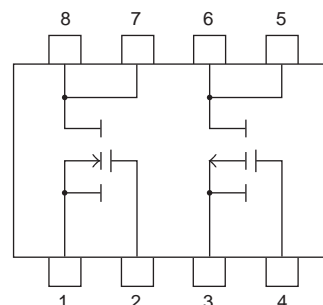
Packing Type : TL



Marking



Electrical Connection



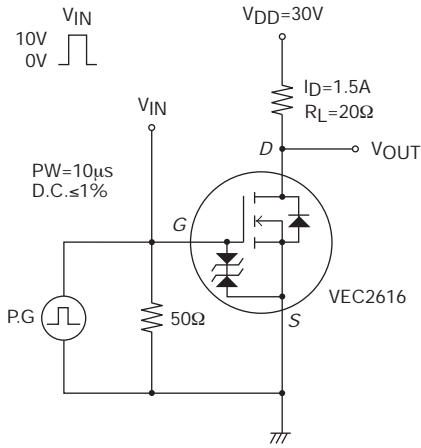
VEC2616

Electrical Characteristics at Ta=25°C

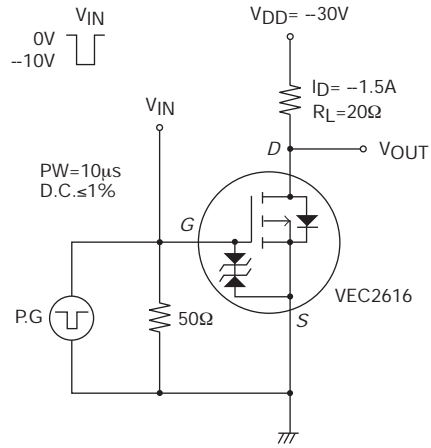
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[N-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	I _D =1mA, V _{GS} =0V	60			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±16V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	1.2		2.6	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =1.5A		2.6		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =1.5A, V _{GS} =10V		62	80	mΩ
	R _{DS(on)2}	I _D =0.75A, V _{GS} =4.5V		76	106	mΩ
	R _{DS(on)3}	I _D =0.75A, V _{GS} =4V		83	116	mΩ
Input Capacitance	C _{iss}	V _{DS} =20V, f=1MHz		505		pF
Output Capacitance	C _{oss}			57		pF
Reverse Transfer Capacitance	C _{rss}			37		pF
Turn-ON Delay Time	t _{d(on)}		See specified Test Circuit.		7.3	
Rise Time	t _r			7.5		ns
Turn-OFF Delay Time	t _{d(off)}			41		ns
Fall Time	t _f			22		ns
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =3A			10	
Gate-to-Source Charge	Q _{gs}			1.6		nC
Gate-to-Drain "Miller" Charge	Q _{gd}			2.1		nC
Diode Forward Voltage	V _{SD}	I _S =3A, V _{GS} =0V		0.81	1.2	V
[P-channel]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	I _D =-1mA, V _{GS} =0V	-60			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =-60V, 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	y _{fs}	V _{DS} =-10V, I _D =-1.5A		3.9		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =-1.5A, V _{GS} =-10V		105	137	mΩ
	R _{DS(on)2}	I _D =-0.75A, V _{GS} =-4.5V		128	180	mΩ
	R _{DS(on)3}	I _D =-0.75A, V _{GS} =-4V		138	194	mΩ
Input Capacitance	C _{iss}	V _{DS} =-20V, f=1MHz		420		pF
Output Capacitance	C _{oss}			54		pF
Reverse Transfer Capacitance	C _{rss}			44		pF
Turn-ON Delay Time	t _{d(on)}		See specified Test Circuit.		6.4	
Rise Time	t _r			9.8		ns
Turn-OFF Delay Time	t _{d(off)}			65		ns
Fall Time	t _f			36		ns
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V, I _D =-2.5A			11	
Gate-to-Source Charge	Q _{gs}			1.4		nC
Gate-to-Drain "Miller" Charge	Q _{gd}			2		nC
Diode Forward Voltage	V _{SD}	I _S =-2.5A, V _{GS} =0V		-0.83	-1.2	V

Switching Time Test Circuit

[N-channel]

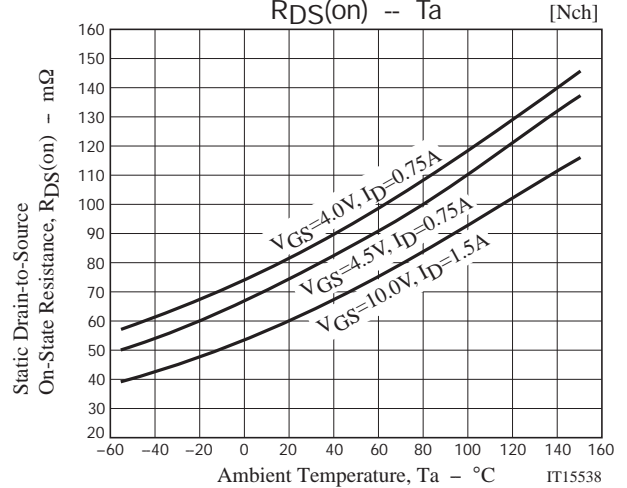
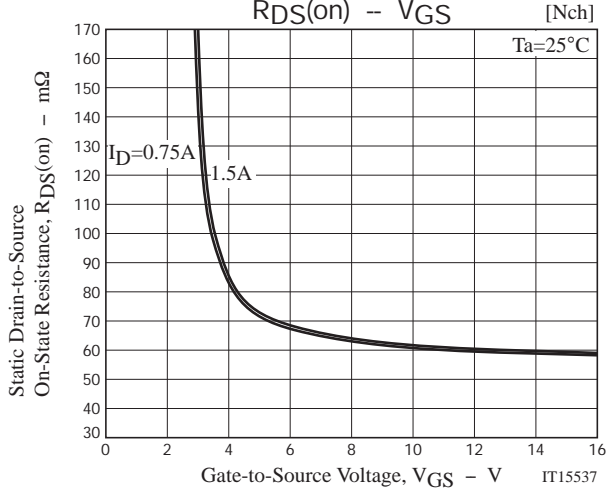
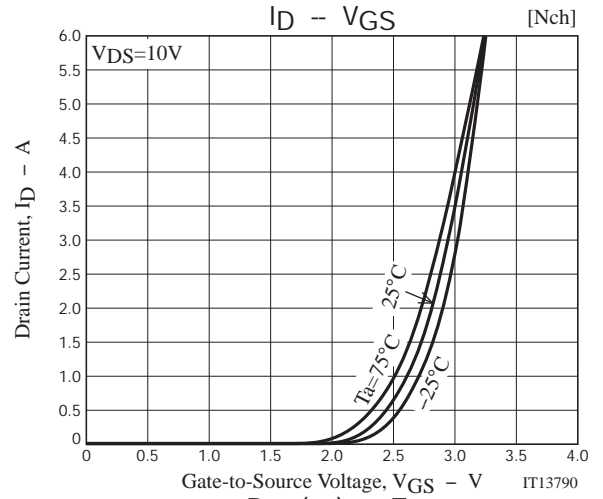
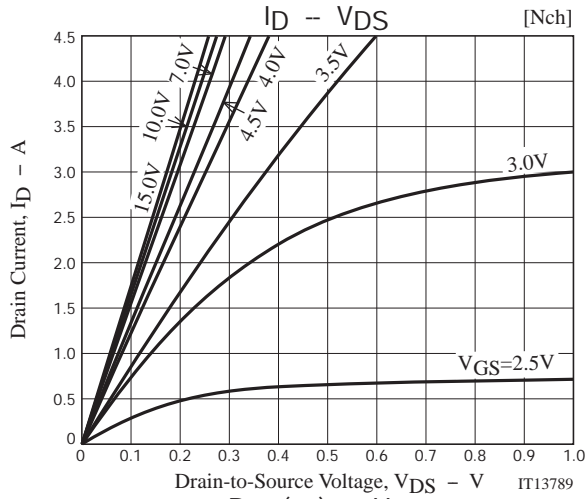


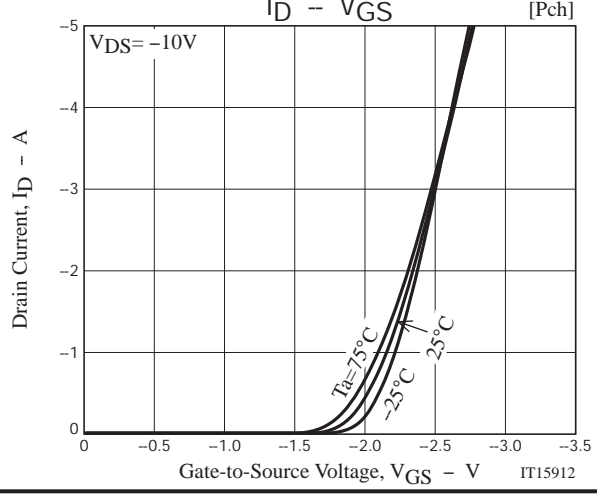
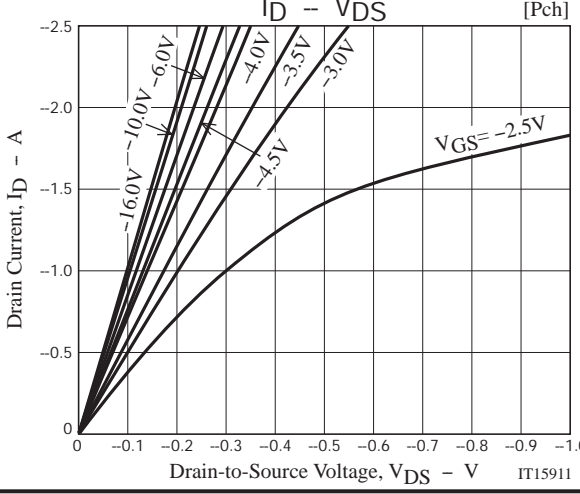
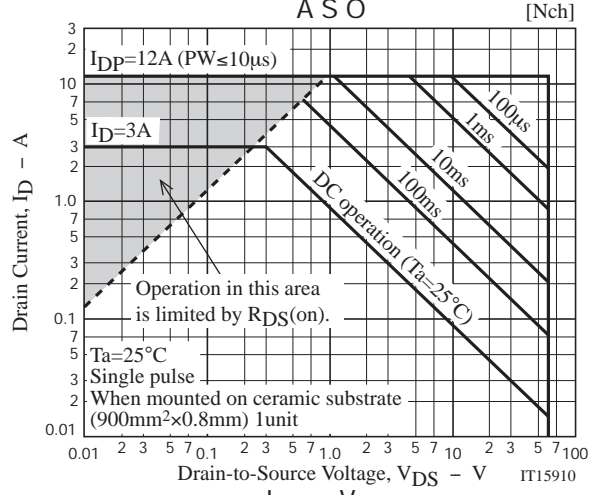
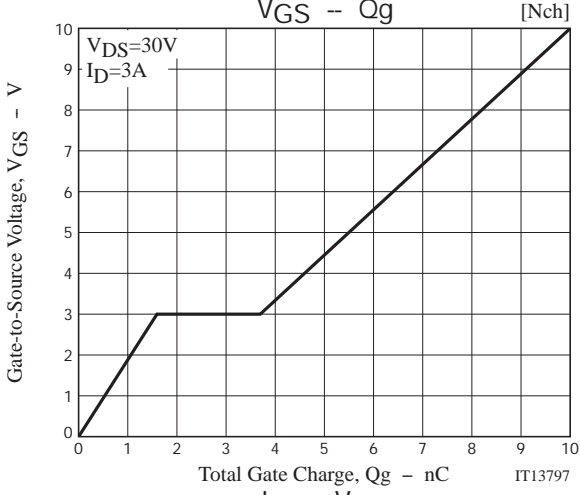
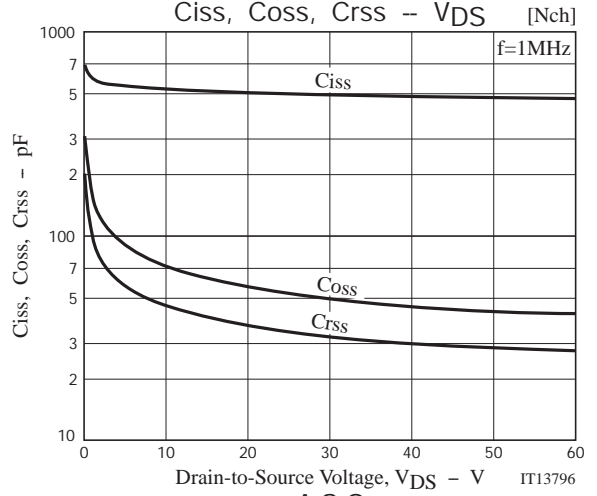
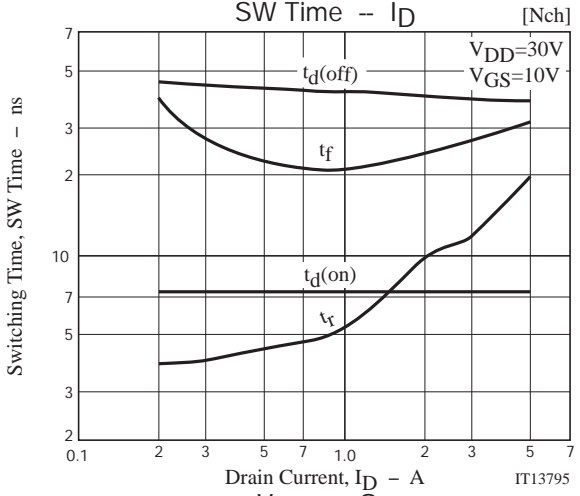
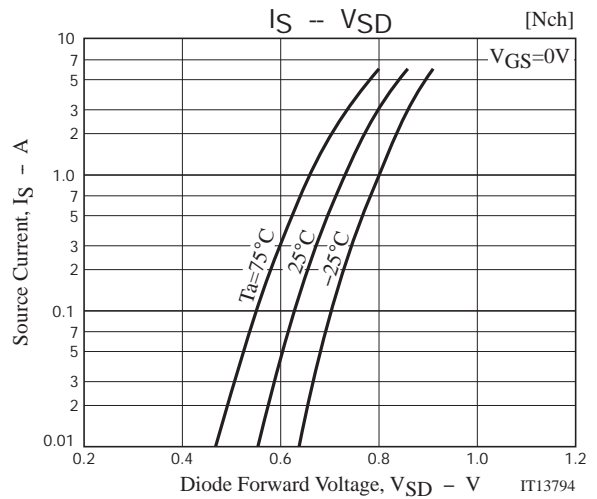
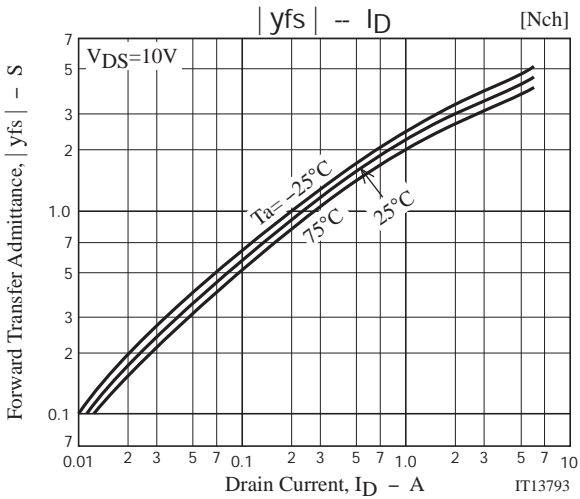
[P-channel]

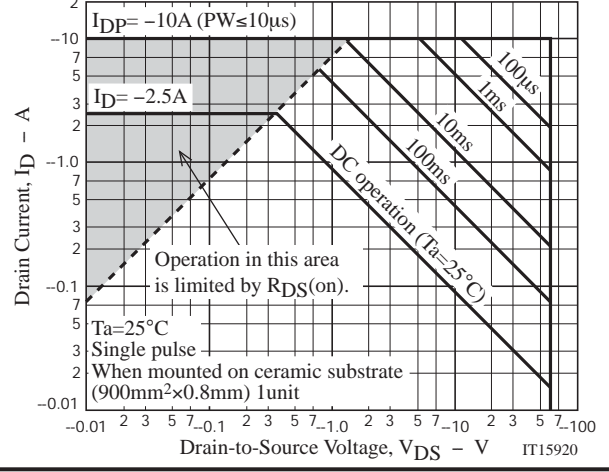
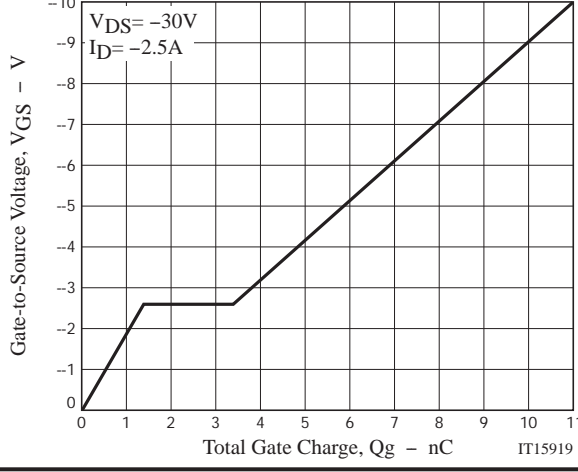
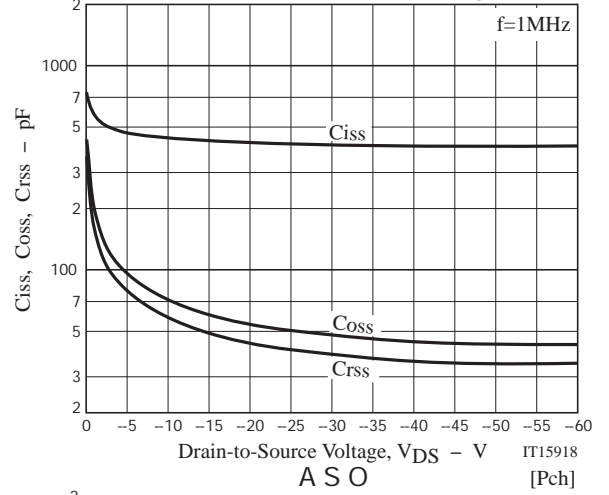
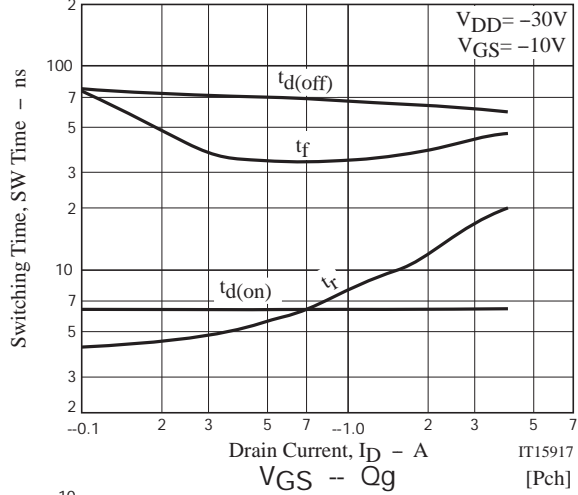
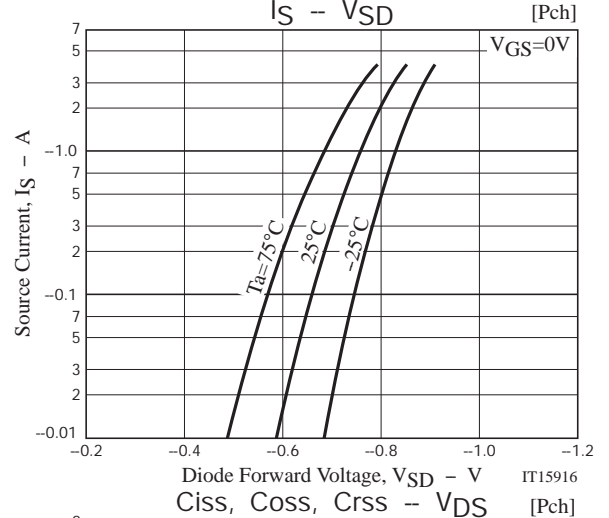
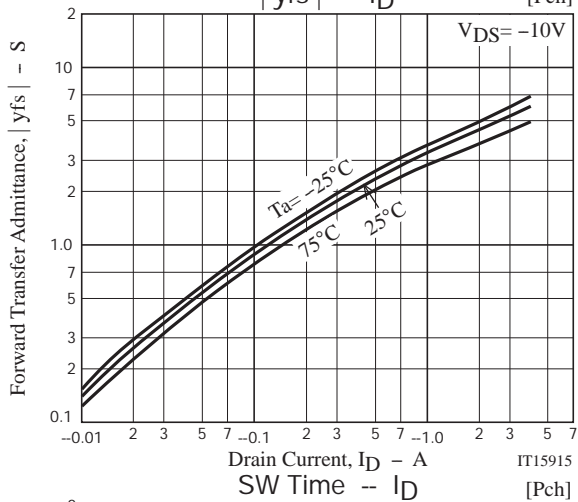
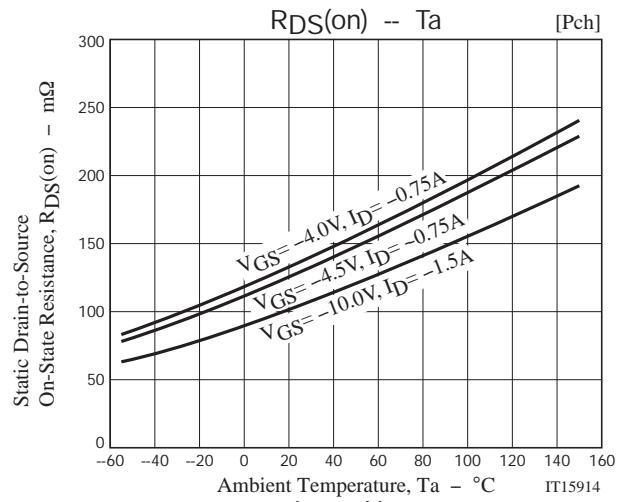
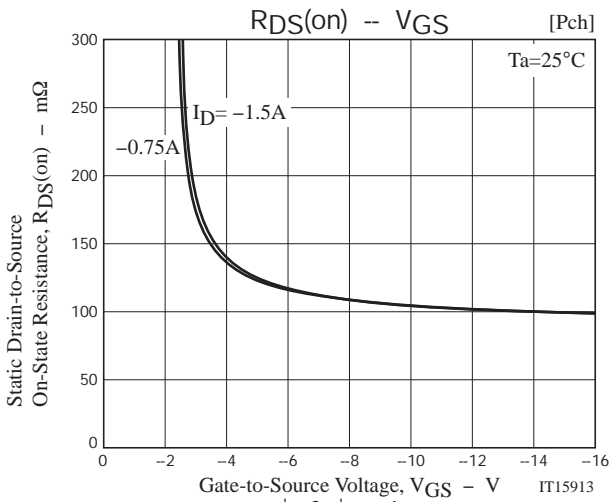


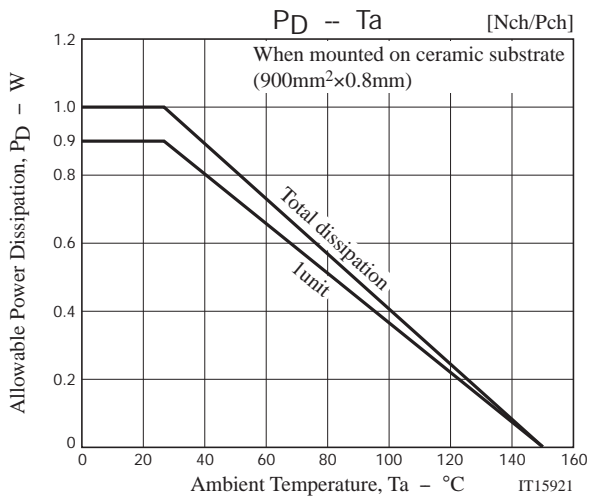
Ordering Information

Device	Package	Shipping	memo
VEC2616-TL-H	VEC8	3,000pcs./reel	Pb Free and Halogen Free









Taping Specification

VEC2616-TL-H

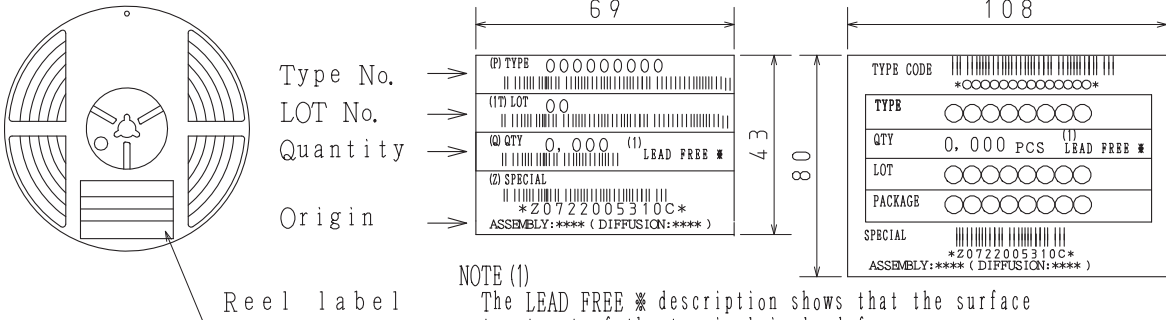
1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
VEC8	CPH6	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method

Reel label, Inner box label (unit:mm) Outer box label

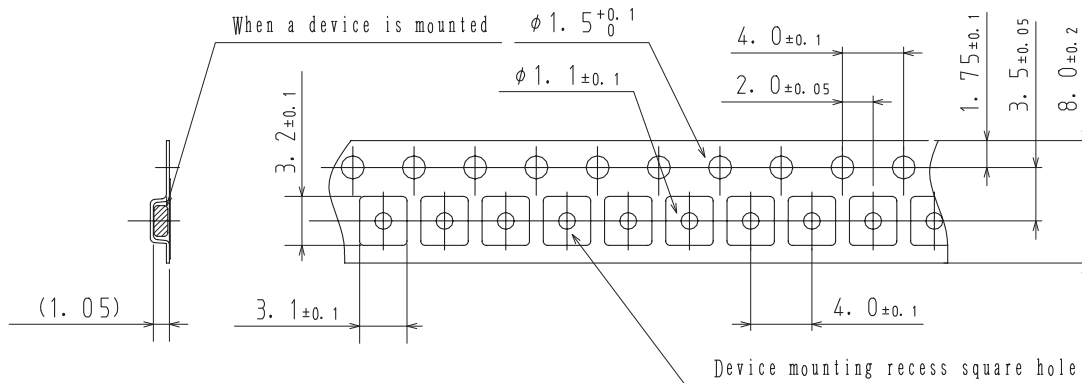
It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



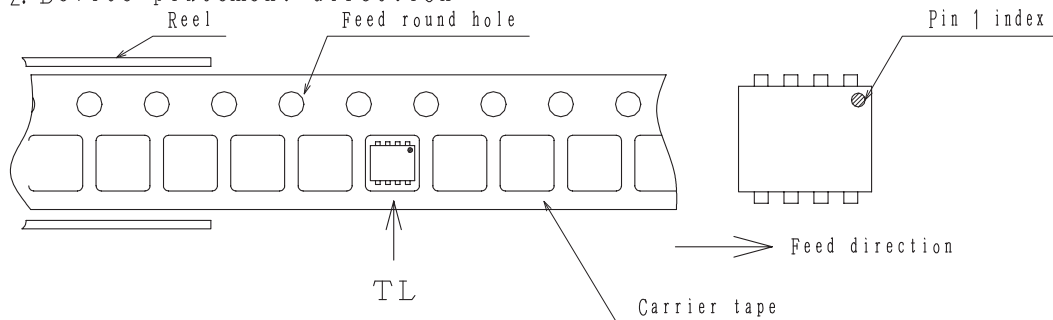
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



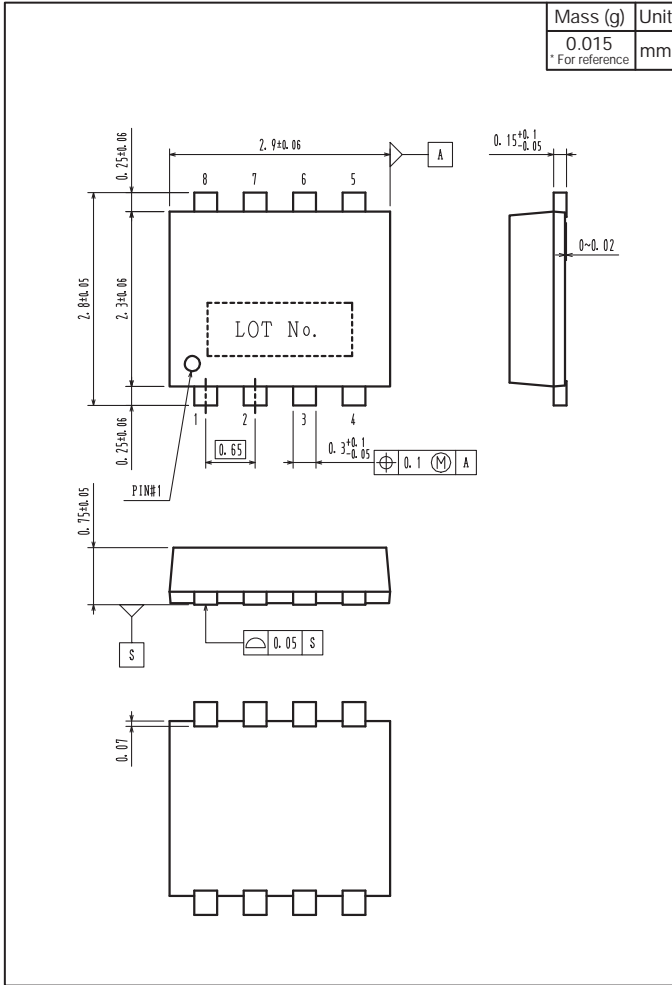
2-2. Device placement direction



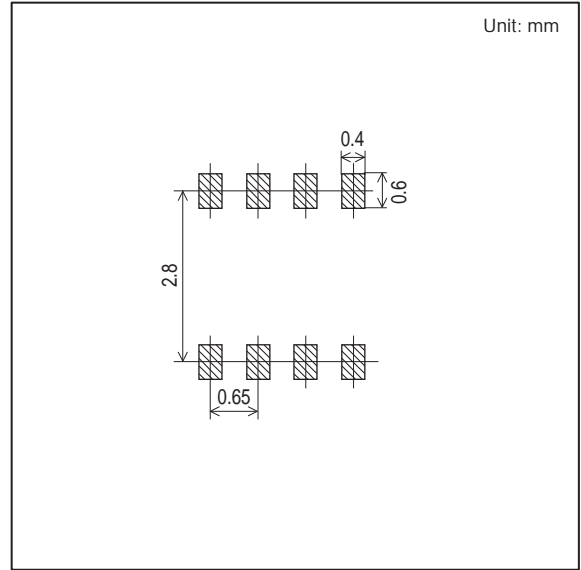
Those with oen electrode terminal on the feed hole side.....TL

VEC2616

Outline Drawing VEC2616-TL-H



Land Pattern Example



Note on usage : Since the VEC2616 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.